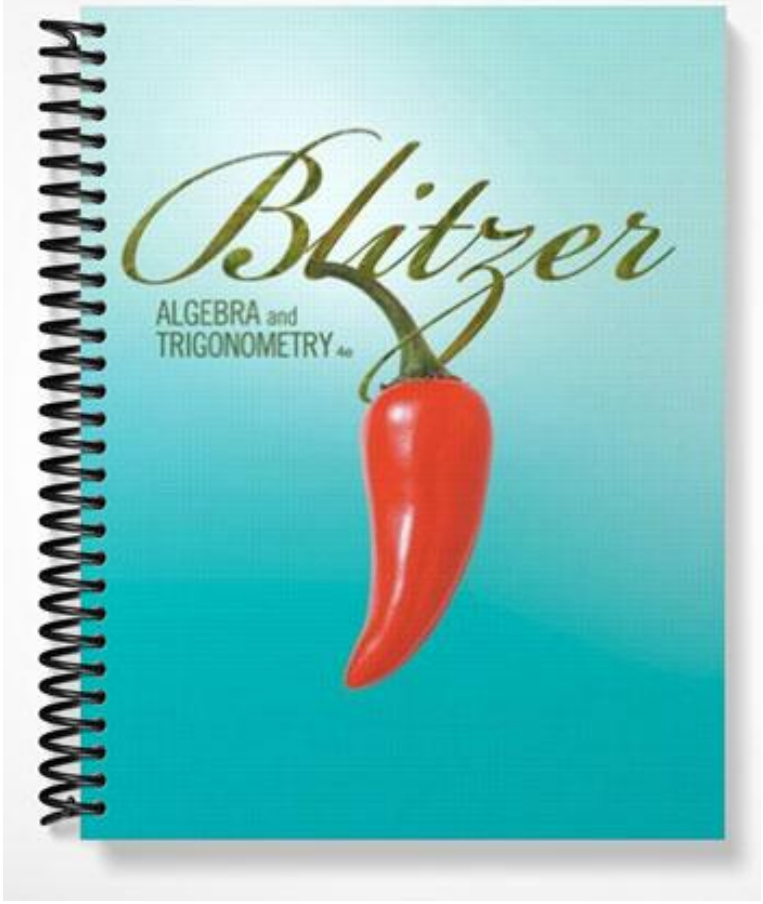
TEST BANK



MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. Give the domain and range of the relation.

1) {(-5, 6), (12, -1), (11, 5), (11, 2)} 1) _____
A) domain = { 12, 11, -5, -11}; range = { -1, 5, 6, 2}
B) domain = { -1, 5, 6, 2}; range = { 12, 11, -5}
C) domain = { 12, 11, -5}; range = { -1, 5, 6, 2}
D) domain = { 12, 11, -5, 21}; range = { -1, 5, 6, 2}
Answer: C

2) {(1, -3), (-5, -1), (8, 3), (8, 7)} 2) _____
A) domain = { -3, 3, -1, 7}; range = { 1, 8, -5}
B) domain = { 1, 8, -5}; range = { -3, 3, -1, 7}
C) domain = { 1, 8, -5, -8}; range = { -3, 3, -1, 7}
D) domain = { 1, 8, -5, 18}; range = { -3, 3, -1, 7}
Answer: B

3) {(8, 9), (7, -7), (11, 2), (9, -8)} 3) _____
A) domain = { 11, 9, 7, 8}; range = { 2, 2, -8, -7, 9}
B) domain = { 11, 9, 7, 8}; range = { 2, -8, -7, 9}
C) domain = { 2, -8, -7, 9}; range = { 11, 9, 7, 8}
D) domain = { 11, 9, 7, 8}; range = { 2, -9, -8, -7, 9}
Answer: B

4) {(9, 3), (9, -7), (-12, 5), (-2, 9), (3, 2)} 4) _____
A) domain = { 5, -7, 2, 9, 3}; range = { -12, -12, 9, 3, -2}
B) domain = { -12, 9, 3, -2}; range = { 5, -7, 2, 9, 3}
C) domain = { -12, 13, 9, 3, -2}; range = { 5, -7, 2, 9, 3}
D) domain = { -12, -3, 9, 3, -2}; range = { 5, -7, 2, 9, 3}
Answer: B

5) {(29, -2), (4, -1), (4, 0), (5, 1), (13, 3)} 5) _____
A) domain: { -2, -1, 0, 1, 3}; range: { 29, 5, 4, 13}
B) domain: { 29, 5, 4, 13}; range: { -2, -1, 0, 1, 3}
C) domain: { 29, 5, 4, 13}; range: { -2, -1, 1, 3}
D) domain: { -2, -1, 1, 3}; range: { 29, 5, 4, 13}
Answer: B

6) {(-4, 8), (-3, 5), (-8, 1), (-7, -5), (-12, 4)} 6) _____
A) domain = { -5, 1, 5, 8, 4}; range = { -7, -8, -3, -4, -12}
B) domain = { 5, -4, 8, -12, 4}; range = { -7, -5, -8, 1, -3}
C) domain = { -7, -5, -8, 1, -3}; range = { 5, -4, 8, -12, 4}
D) domain = { -7, -8, -3, -4, -12}; range = { -5, 1, 5, 8, 4}
Answer: D

7) {(-2, 5), (-1, 2), (0, 1), (1, 2), (3, 10)} 7) _____
A) domain: { -2, -1, 0, 1, 3}; range: { 5, 2, 1, 10}
B) domain: { -2, -1, 1, 3}; range: { 5, 2, 1, 10}
C) domain: { 5, 2, 1, 10}; range: { -2, -1, 1, 3}
D) domain: { 5, 2, 1, 10}; range: { -2, -1, 0, 1, 3}
Answer: A

Determine whether the relation is a function.

8) {(-3, 7), (2, 9), (6, 4), (7, 5), (11, 1)} 8) _____
A) Function B) Not a function
Answer: A

9) {(-5, 1), (-3, 6), (1, 9), (1, 4)} 9) _____
A) Function B) Not a function
Answer: B

10) {(-7, -5), (-7, 8), (-1, -5), (6, -1), (10, -8)} 10) _____
A) Function B) Not a function
Answer: B

11) {(3, 6), (3, -6), (6, 1), (8, 8), (10, 4)} 11) _____
A) Not a function B) Function
Answer: A

12) {(-5, 6), (-2, 3), (4, 5), (7, 8)} 12) _____
A) Not a function B) Function
Answer: B

13) {(-6, 2), (-6, -1), (2, 4), (4, 5), (7, 7)} 13) _____
A) Not a function B) Function
Answer: A

14) {(-7, 7), (-4, 7), (1, -4), (2, -4)} 14) _____
A) Not a function B) Function
Answer: B

15) {(-6, -3), (-2, 4), (1, -4), (1, -6)} 15) _____
A) Function B) Not a function
Answer: B

16) {(-5, -2), (-3, 5), (-1, 6), (8, 5)} 16) _____
A) Function B) Not a function
Answer: A

17) {(1, -5), (3, -5), (6, -1), (8, -7), (10, -7)} 17) _____
A) Not a function B) Function
Answer: B

Determine whether the equation defines y as a function of x.

18) $x + y = 16$ 18) _____
A) y is a function of x B) y is not a function of x
Answer: A

19) $4x + 4y = 2$ 19) _____
A) y is a function of x B) y is not a function of x
Answer: A

20) $x^2 + y = 1$ 20) _____
A) y is a function of x B) y is not a function of x

Answer: A

21) $x + y^2 = 4$ 21) _____

A) y is a function of x B) y is not a function of x

Answer: B

22) $x^2 + y^2 = 9$ 22) _____

A) y is a function of x B) y is not a function of x

Answer: B

23) $y^2 = 2x$ 23) _____

A) y is a function of x B) y is not a function of x

Answer: B

24) $x = y^2$ 24) _____

A) y is a function of x B) y is not a function of x

Answer: B

25) $y = x^2$ 25) _____

A) y is a function of x B) y is not a function of x

Answer: A

26) $y = -\sqrt{x + 6}$ 26) _____

A) y is a function of x B) y is not a function of x

Answer: A

27) $y = \sqrt{-6x + 8}$ 27) _____

A) y is a function of x B) y is not a function of x

Answer: A

28) $x + y^3 = 27$ 28) _____

A) y is a function of x B) y is not a function of x

Answer: A

29) $xy - 4y = 1$ 29) _____

A) y is a function of x B) y is not a function of x

Answer: A

30) $|x| - y = 2$ 30) _____

A) y is a function of x B) y is not a function of x

Answer: A

Evaluate the function at the given value of the independent variable and simplify.

31) $f(x) = -7x - 5$; $f(5)$ 31) _____

A) -12 B) -30 C) -40 D) -60

Answer: C

32) $f(x) = x^2 - 1$; $f(x - 4)$ 32) _____

A) $x^2 + 16$ B) $x^2 - 8x + 15$ C) $x^2 - 8x + 16$ D) $x^2 - 5$

Answer: B

33) $f(x) = 5x^2 - 4x + 7$; $f(x - 1)$ 33) _____

A) $5x^2 - 14x + 8$ B) $-14x^2 + 5x + 16$ C) $5x^2 + 31x + 8$ D) $5x^2 - 14x + 16$

Answer: D

34) $g(x) = 3x + 4$; $g(x + 1)$ 34) _____

A) $3x - 1$ B) $3x + 7$ C) $3x + 4$ D) $\frac{1}{3}x + 4$

Answer: B

35) $h(x) = |x - 4|$; $h(10)$ 35) _____

A) -6 B) -14 C) 14 D) 6

Answer: D

36) $f(x) = \sqrt{x + 19}$; $f(-3)$ 36) _____

A) 4 B) 2

C) -4 D) not a real number

Answer: A

37) $f(x) = \frac{x^2 - 8}{x^3 + 6x}$; $f(5)$ 37) _____

A) $\frac{5}{31}$ B) $\frac{17}{131}$ C) $\frac{17}{125}$ D) $\frac{17}{155}$

Answer: D

38) $f(x) = \frac{x^3 + 7}{x^2 + 4}$; $f(5)$ 38) _____

A) $\frac{32}{29}$ B) $\frac{132}{29}$ C) $\frac{125}{29}$ D) $\frac{132}{25}$

Answer: B

Solve the problem.

39) The function $P(x) = 0.75x - 98$ models the relationship between the number of pretzels x that a certain vendor sells and the profit the vendor makes. Find $P(600)$, the profit the vendor makes from selling 600 pretzels. 39) _____

A) \$548 B) \$ 352 C) \$ 450 D) \$ 502

Answer: B

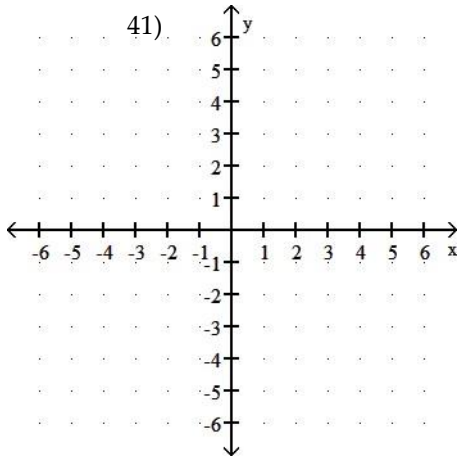
40) The total cost in dollars for a certain company to produce x empty jars to be used by a jelly producer is given by the function $C(x) = 0.4x + 38{,}000$. Find $C(90{,}000)$, the cost of producing 90,000 jars. 40) _____

A) \$ 38.40 B) \$ 90,038 C) \$ 74,000 D) \$ 36,000

Answer: C

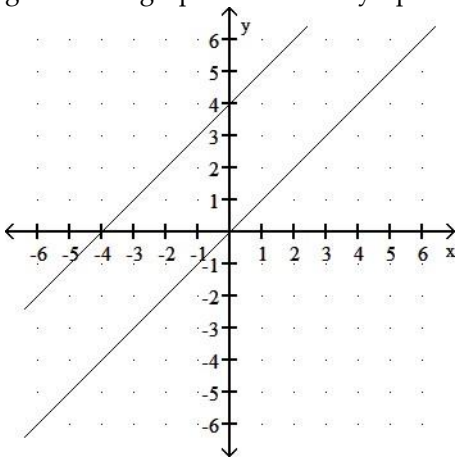
Graph the given functions on the same rectangular coordinate system. Describe how the graph of g is related to the graph of f.

41) $f(x) = x$, $g(x) = x + 4$

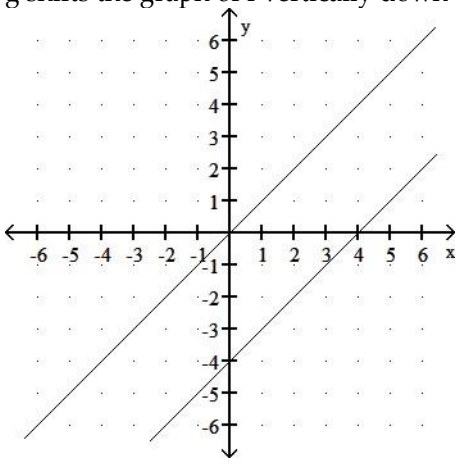
41) 

___
___

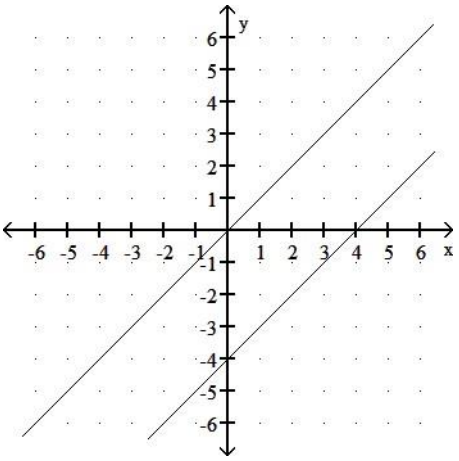
A) g shifts the graph of f vertically up 4 units



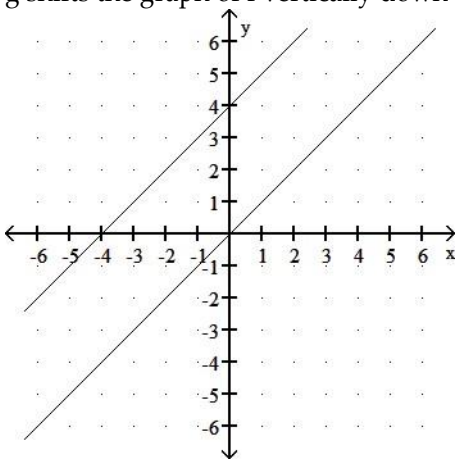
B) g shifts the graph of f vertically down 4 units



C) g shifts the graph of f vertically up 4 units

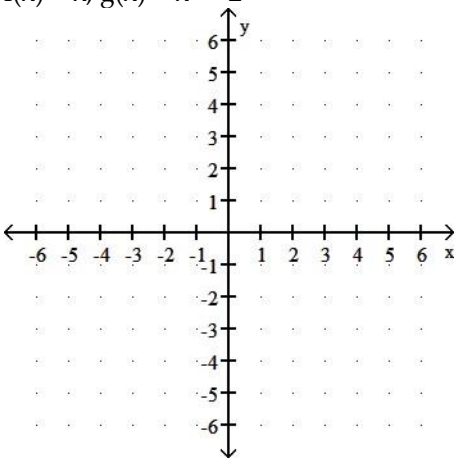


D) g shifts the graph of f vertically down 4 units

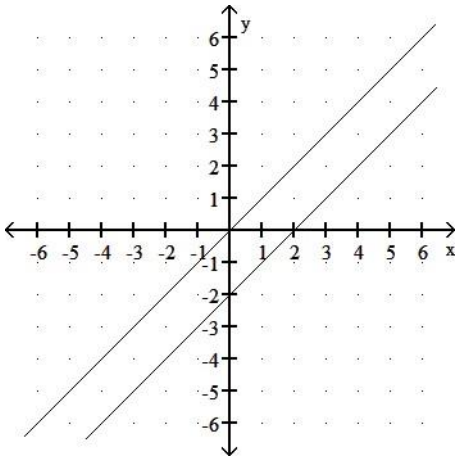


Answer: A

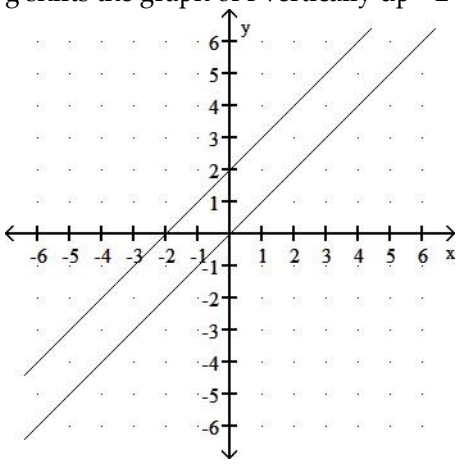
42) f(x) = x, g(x) = x - 2 42) _____



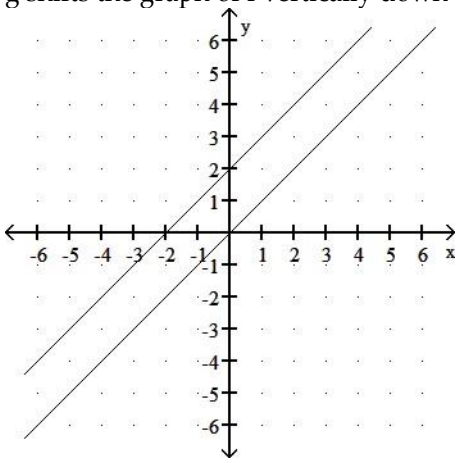
A) g shifts the graph of f vertically up 2 units



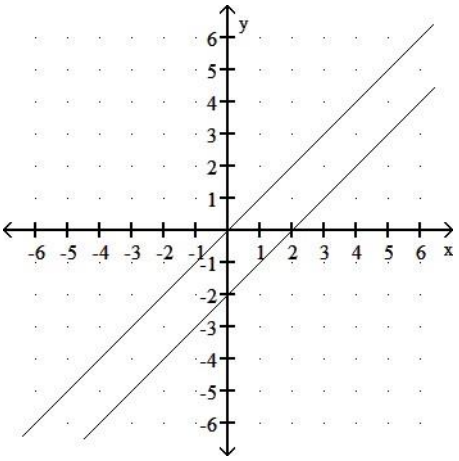
B) g shifts the graph of f vertically up 2 units



C) g shifts the graph of f vertically down 2 units

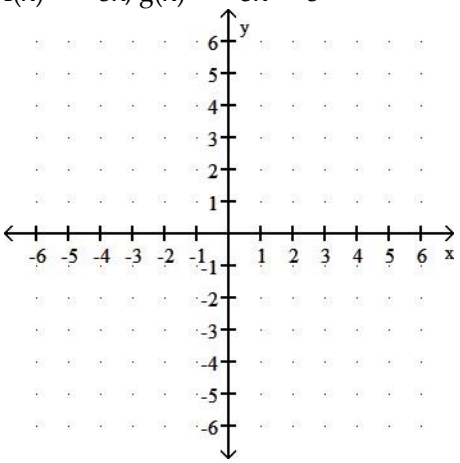


D) g shifts the graph of f vertically down 2 units

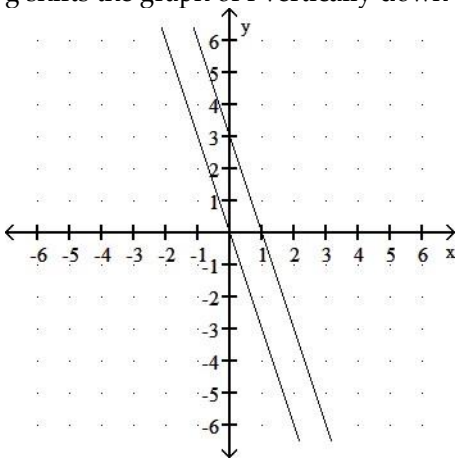


Answer: D

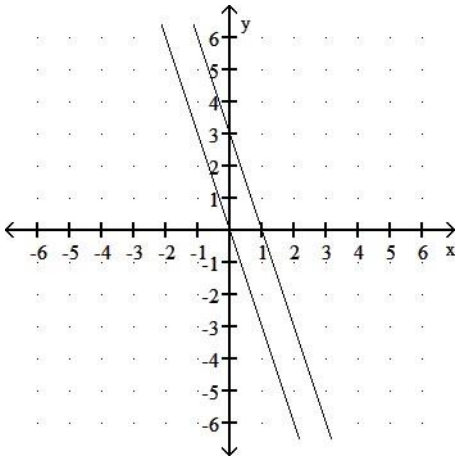
43) f(x) = -3x, g(x) = -3x - 3 43) _____



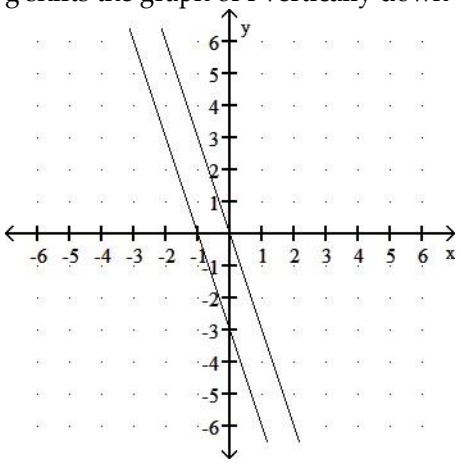
A) g shifts the graph of f vertically down 3 units



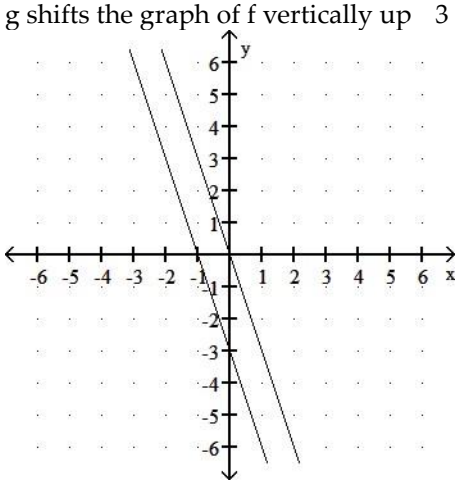
B) g shifts the graph of f vertically up 3 units



C) g shifts the graph of f vertically down 3 units

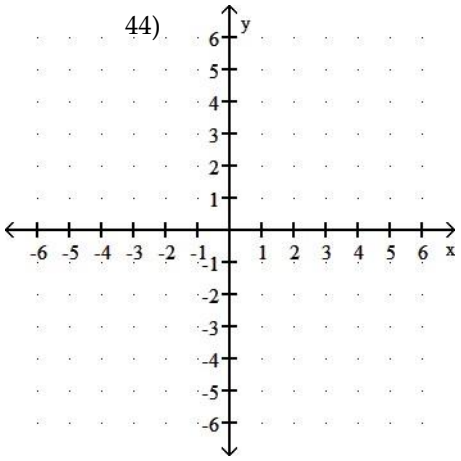


D) g shifts the graph of f vertically up 3 units

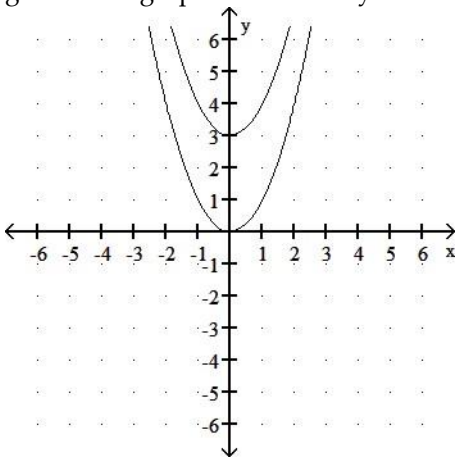


Answer: C

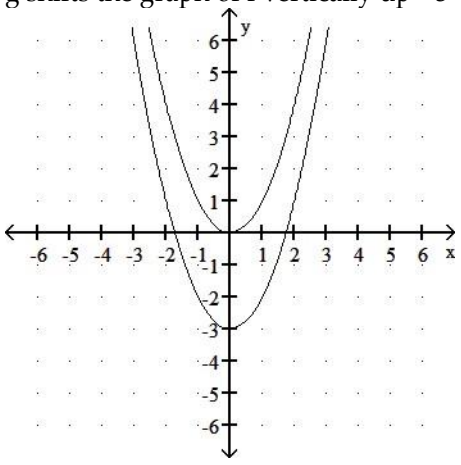
44) $f(x) = x^2$, $g(x) = x^2 + 3$

44) 

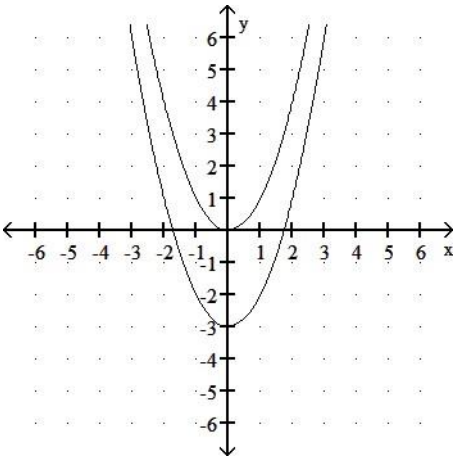
A) g shifts the graph of f vertically down 3 units



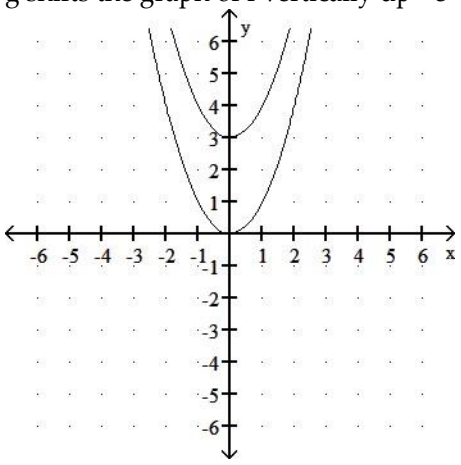
B) g shifts the graph of f vertically up 3 units



C) g shifts the graph of f vertically down 3 units

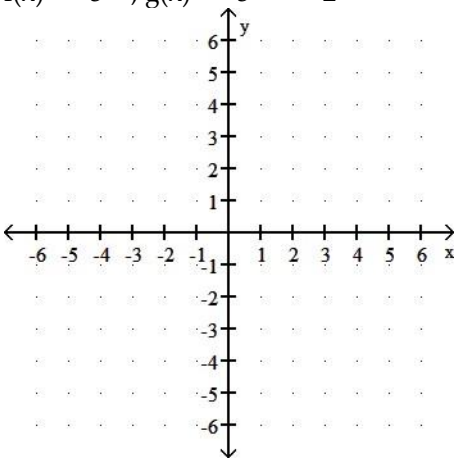


D) g shifts the graph of f vertically up 3 units

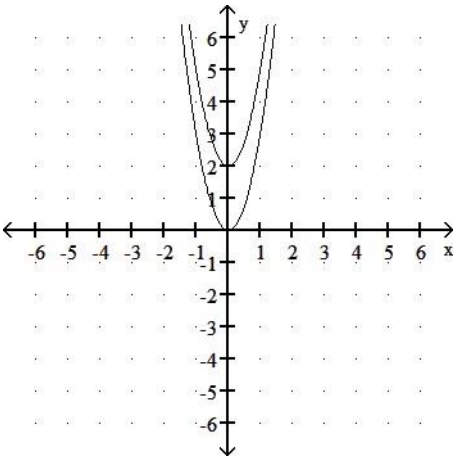


Answer: D

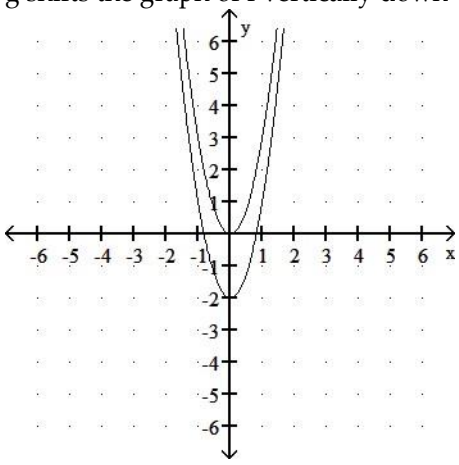
45) $f(x) = 3^{x^2}$, $g(x) = 3^{x^2} - 2$ 45) _____



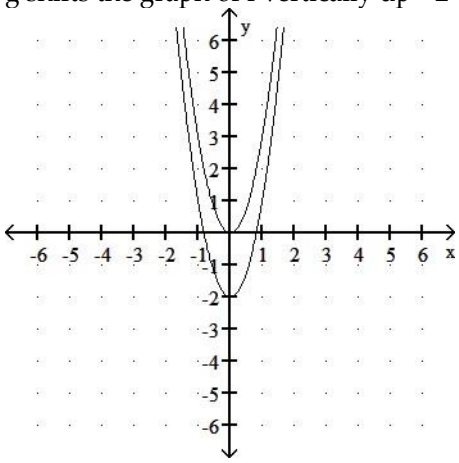
A) g shifts the graph of f vertically up 2 units



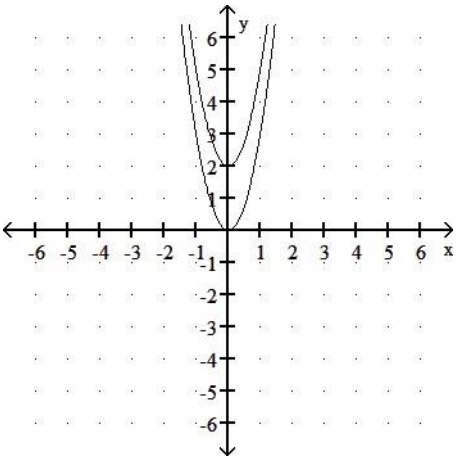
B) g shifts the graph of f vertically down 2 units



C) g shifts the graph of f vertically up 2 units

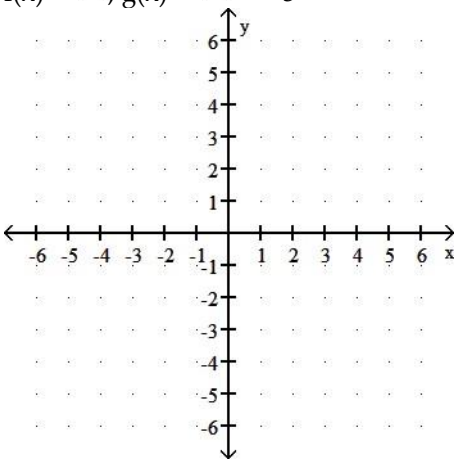


D) g shifts the graph of f vertically down 2 units

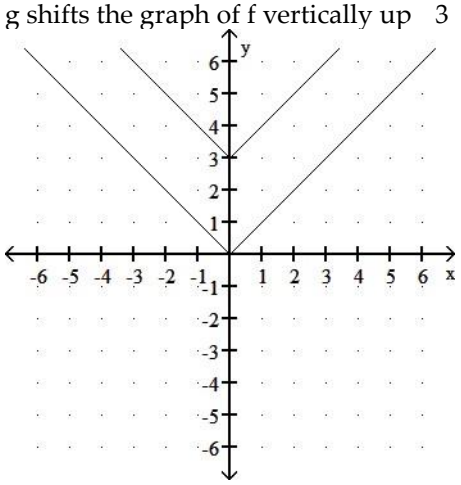


Answer: B

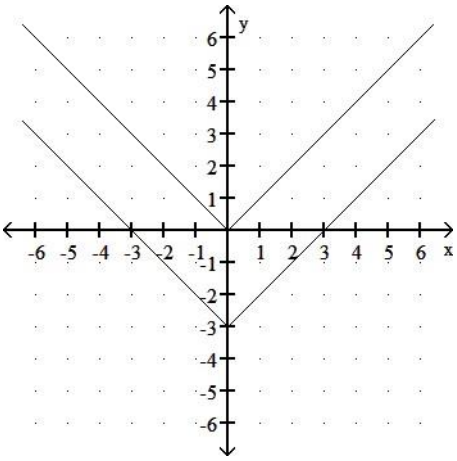
46) $f(x) = |x|$, $g(x) = |x| + 3$ 46) _____



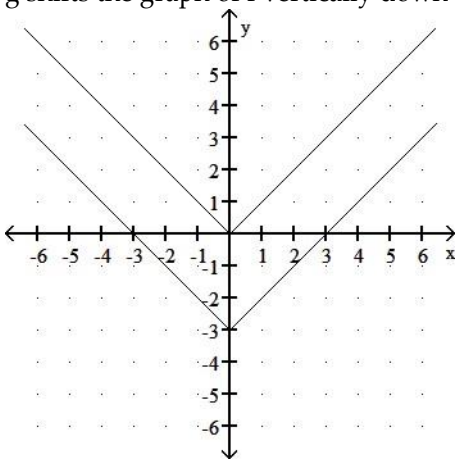
A) g shifts the graph of f vertically up 3 units



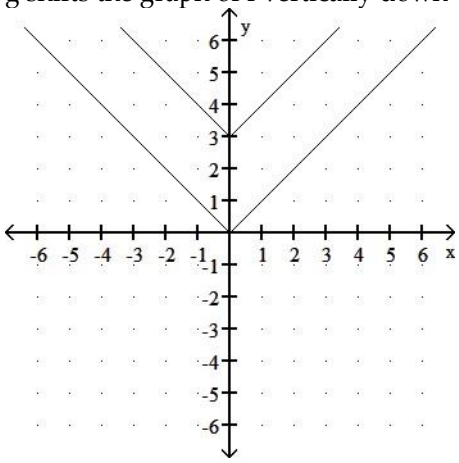
B) g shifts the graph of f vertically up 3 units



C) g shifts the graph of f vertically down 3 units

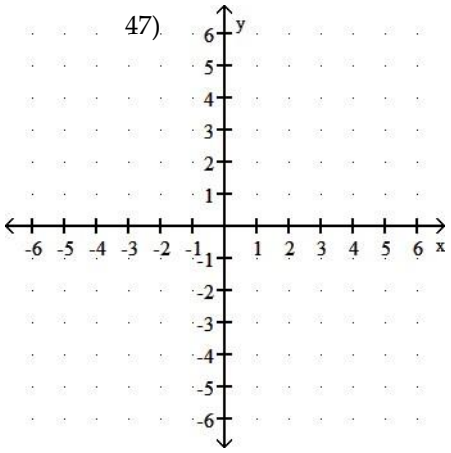


D) g shifts the graph of f vertically down 3 units



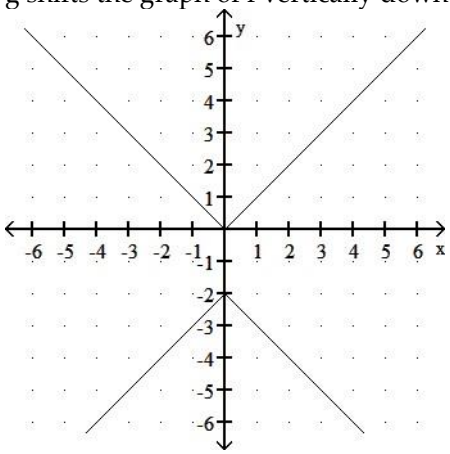
Answer: A

47) $f(x) = |x|$, $g(x) = |x| - 2$

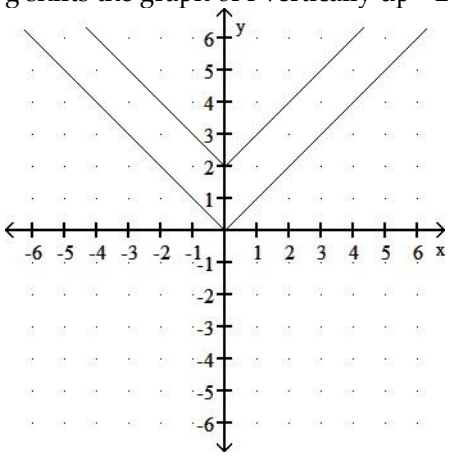
47) 

___
___

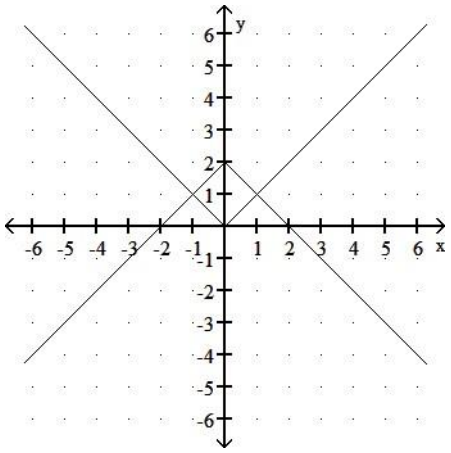
A) g shifts the graph of f vertically down 2 units



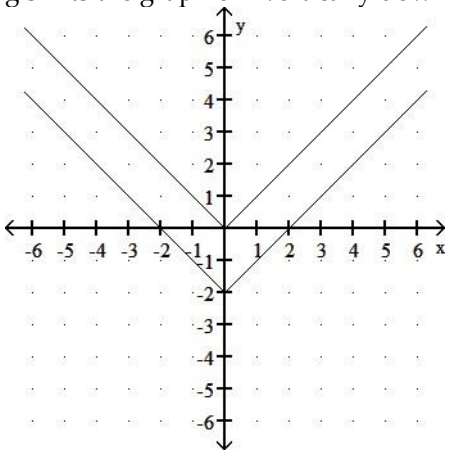
B) g shifts the graph of f vertically up 2 units



C) g shifts the graph of f vertically up 2 units

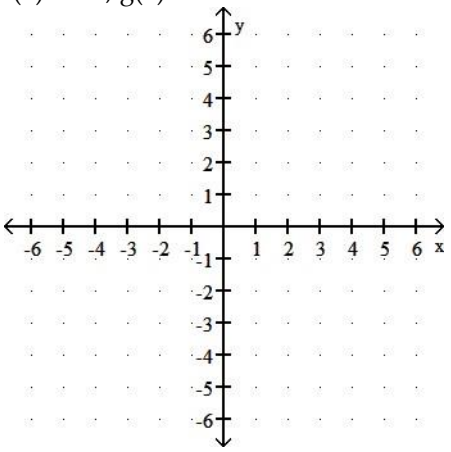


D) g shifts the graph of f vertically down 2 units

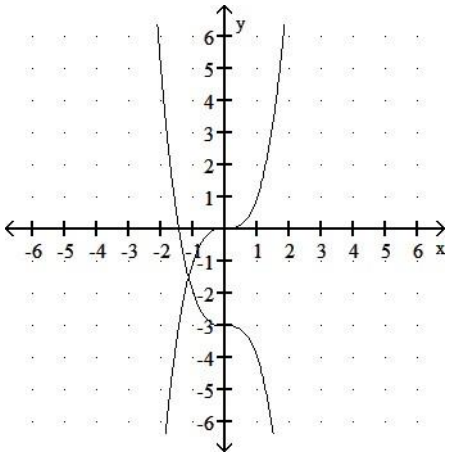


Answer: D

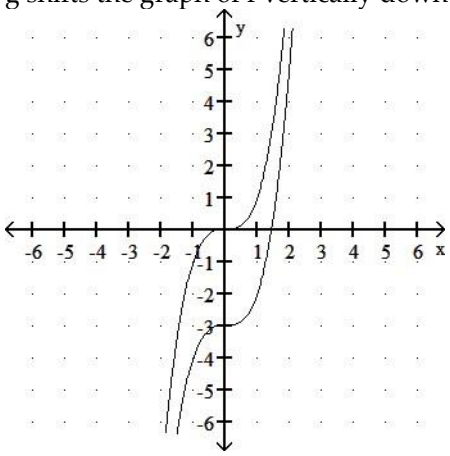
48) $f(x) = x^3$, $g(x) = x^3 + 3$ 48) _____



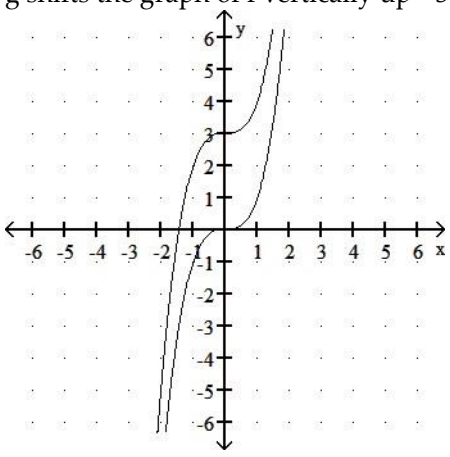
A) g shifts the graph of f vertically down 3 units



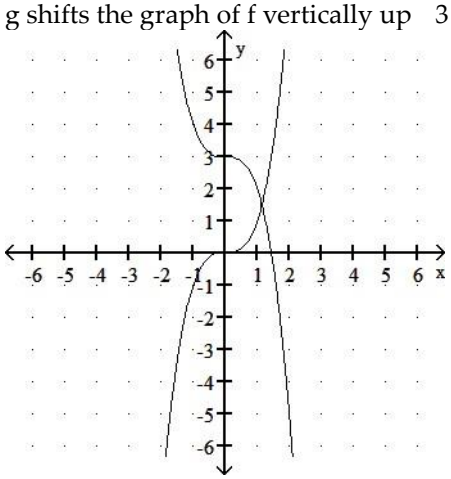
B) g shifts the graph of f vertically down 3 units



C) g shifts the graph of f vertically up 3 units

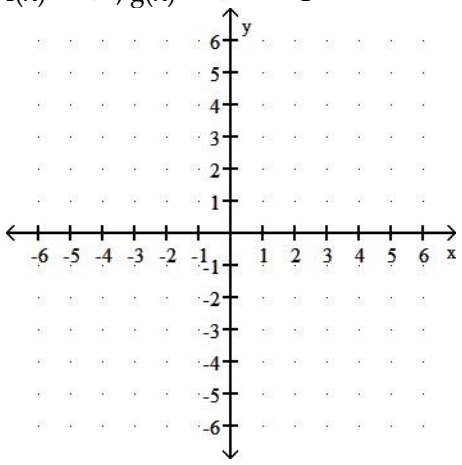


D) g shifts the graph of f vertically up 3 units

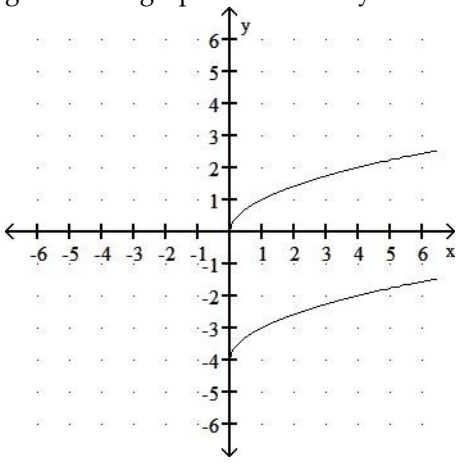


Answer: C

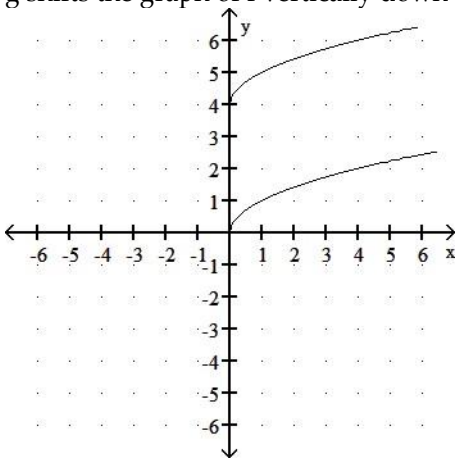
49) $f(x) = \sqrt{x}$, $g(x) = \sqrt{x} + 4$ 49) _____



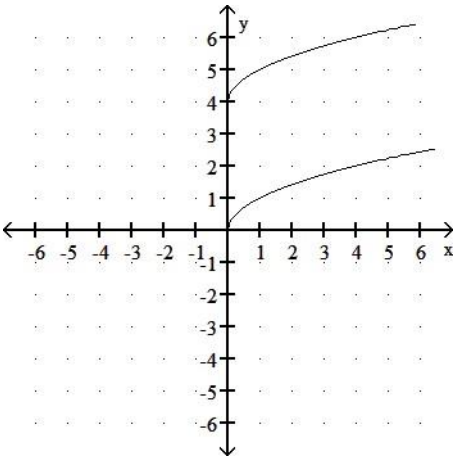
A) g shifts the graph of f vertically down 4 units



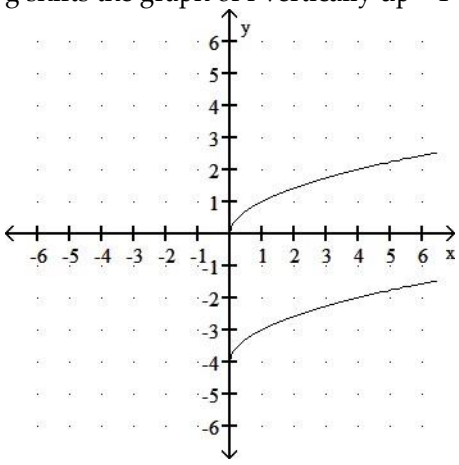
B) g shifts the graph of f vertically down 4 units



C) g shifts the graph of f vertically up 4 units

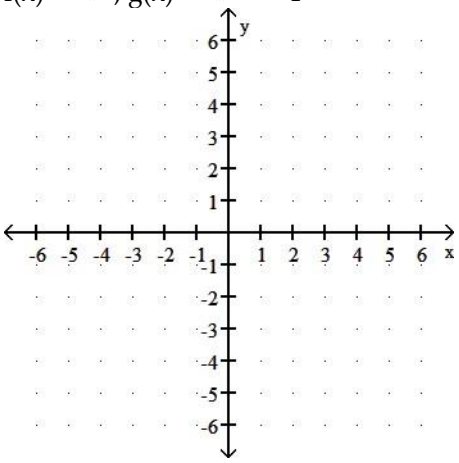


D) g shifts the graph of f vertically up 4 units

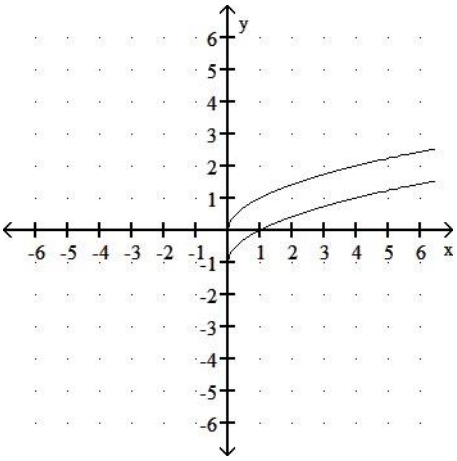


Answer: C

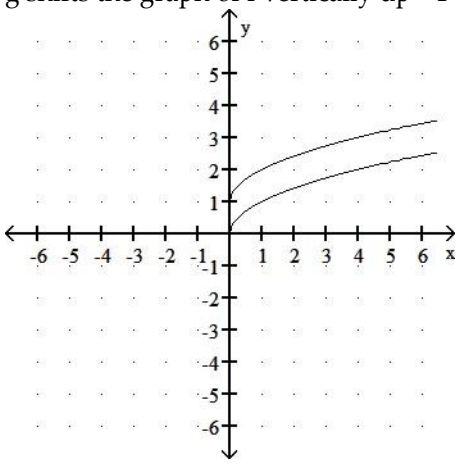
50) $f(x) = \sqrt{x}$, $g(x) = \sqrt{x} - 1$ 50) _____



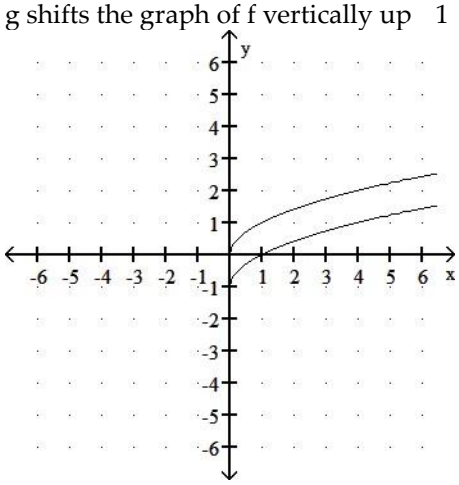
A) g shifts the graph of f vertically down 1 unit



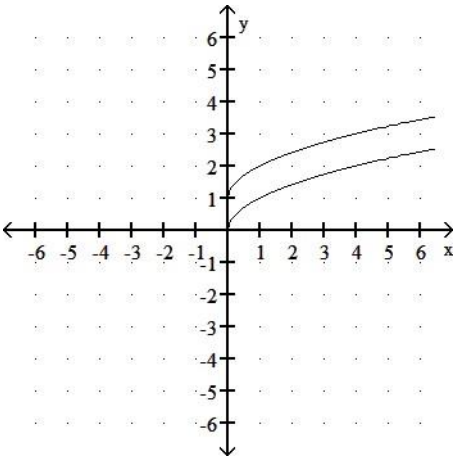
B) g shifts the graph of f vertically up 1 unit



C) g shifts the graph of f vertically up 1 unit

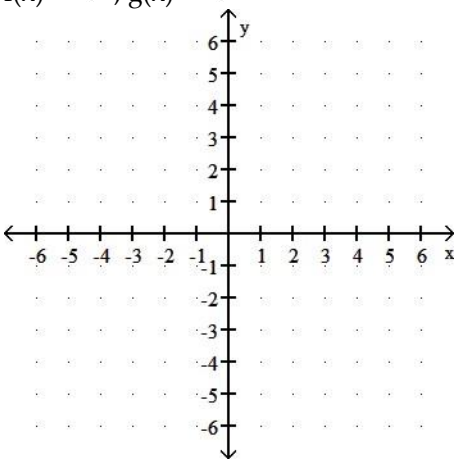


D) g shifts the graph of f vertically down 1 unit

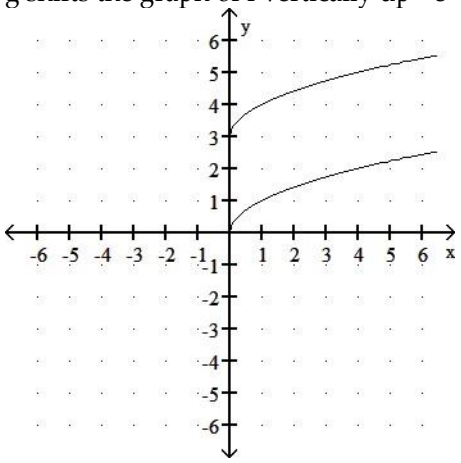


Answer: A

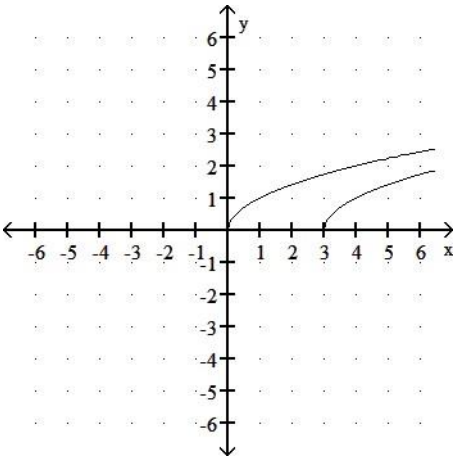
51) $f(x) = \sqrt{x}$, $g(x) = \sqrt{x + 3}$ 51) _____



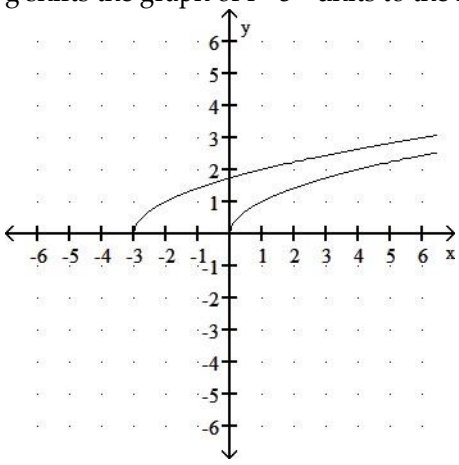
A) g shifts the graph of f vertically up 3 units



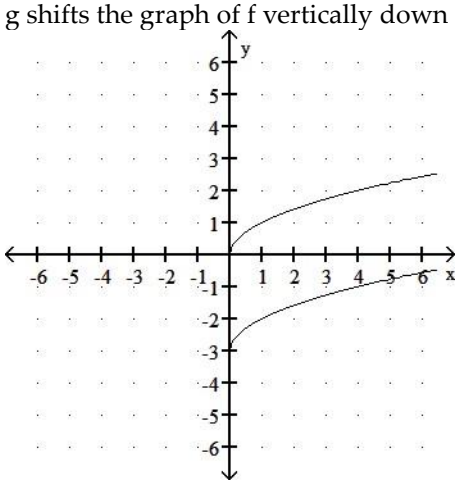
B) g shifts the graph of f 3 units to the right



C) g shifts the graph of f 3 units to the left

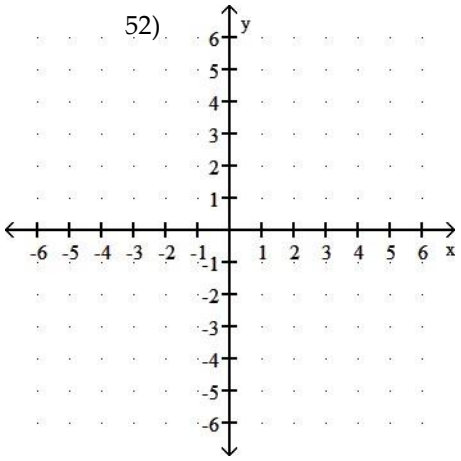


D) g shifts the graph of f vertically down 3 units

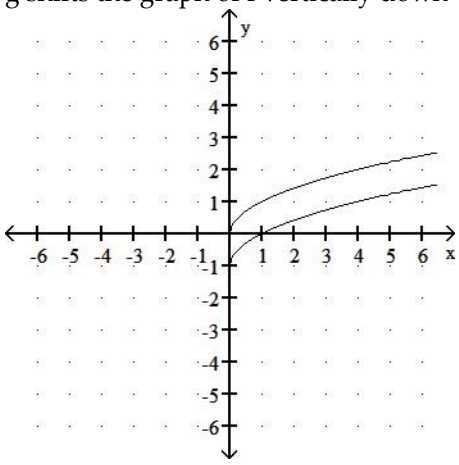


Answer: C

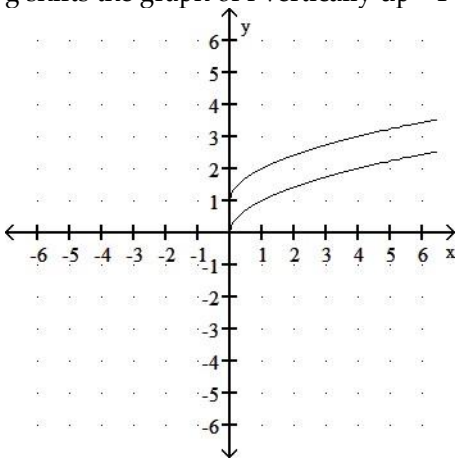
52) $f(x) = \sqrt{x}$, $g(x) = \sqrt{x - 1}$

52) 

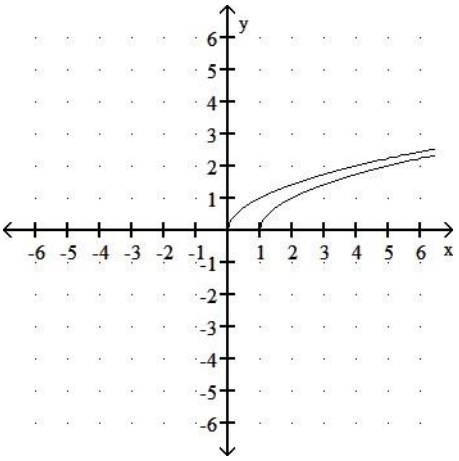
A) g shifts the graph of f vertically down 1 unit



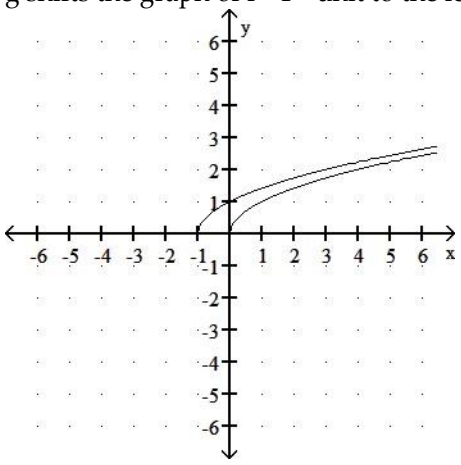
B) g shifts the graph of f vertically up 1 unit



C) g shifts the graph of f 1 unit to the right



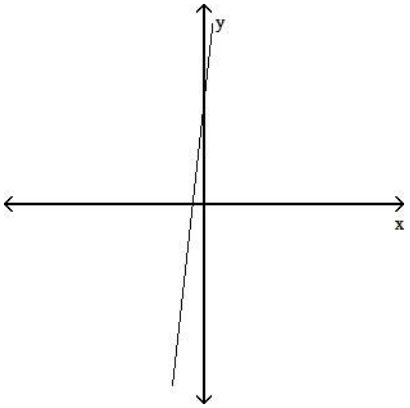
D) g shifts the graph of f 1 unit to the left



Answer: C

Use the vertical line test to determine whether or not the graph is a graph in which y is a function of x.

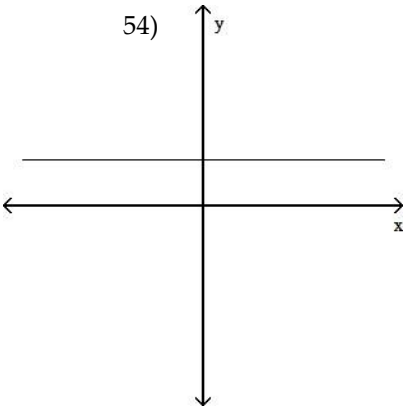
53) 53) _____



A) not a function B) function

Answer: B

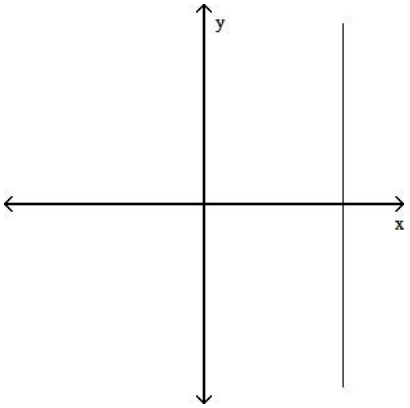
54)

54) 

___
___

A) not a function B) function

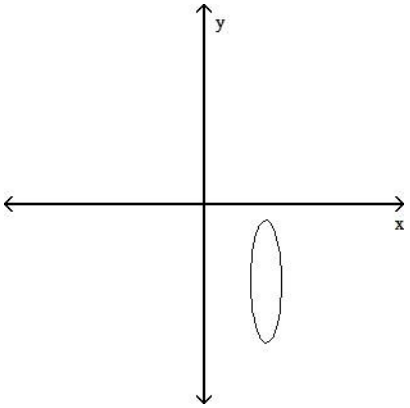
Answer: B

55) 

55) _____

A) not a function B) function

Answer: A

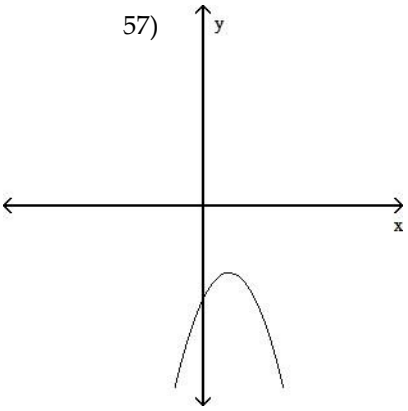
56) 

56) _____

A) not a function B) function

Answer: A

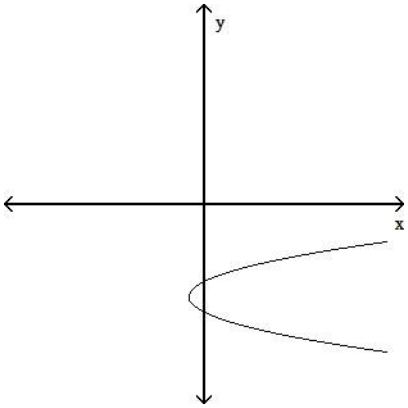
57)

57) 

___
___

A) not a function B) function

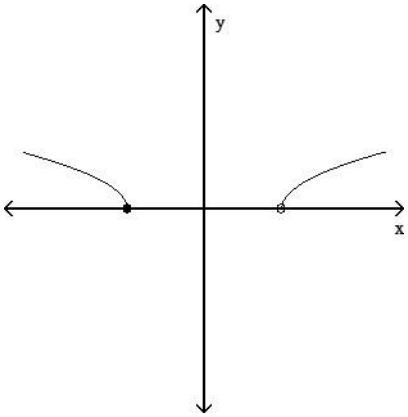
Answer: B

58) 

58) _____

A) function B) not a function

Answer: B

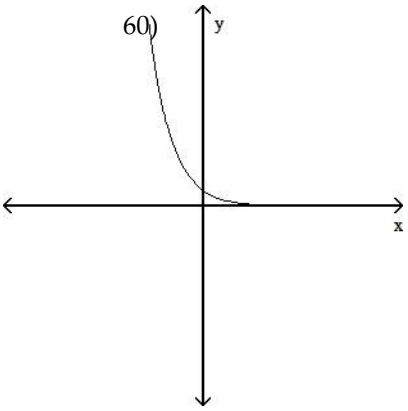
59) 

59) _____

A) not a function B) function

Answer: B

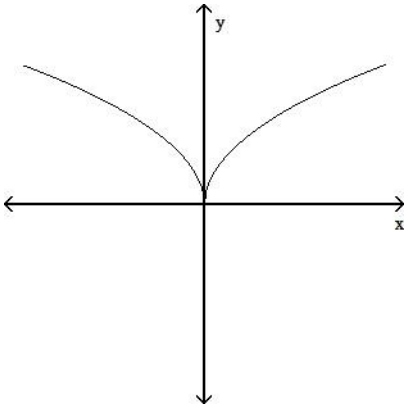
60)

60) 

___
___

A) function B) not a function

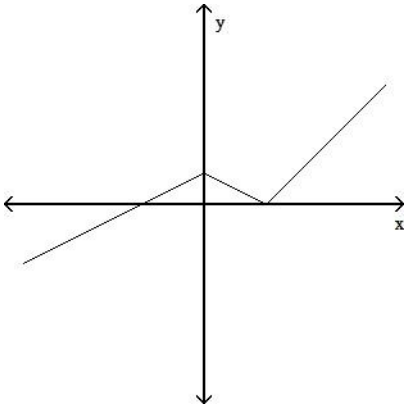
Answer: A

61) 

61) _____

A) function B) not a function

Answer: A

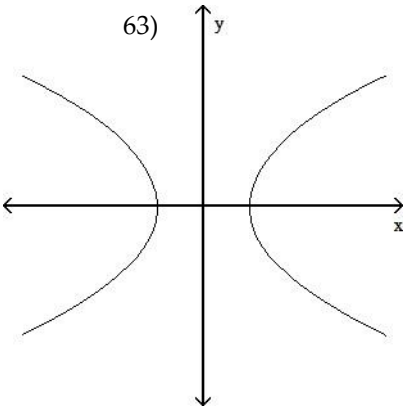
62) 

62) _____

A) function B) not a function

Answer: A

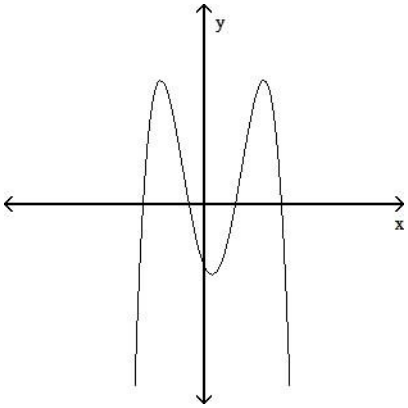
63)

63) 

___
___

A) not a function B) function

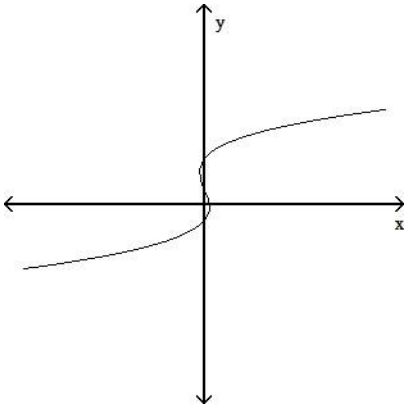
Answer: A

64) 

64) _____

A) function B) not a function

Answer: A

65) 

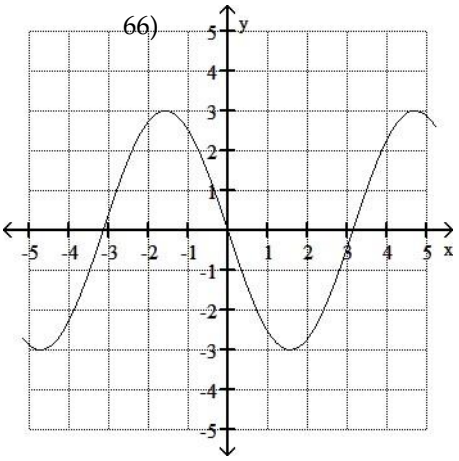
65) _____

A) function B) not a function

Answer: B

Use the graph to find the indicated function value.

66) y = f(x). Find f(-3)

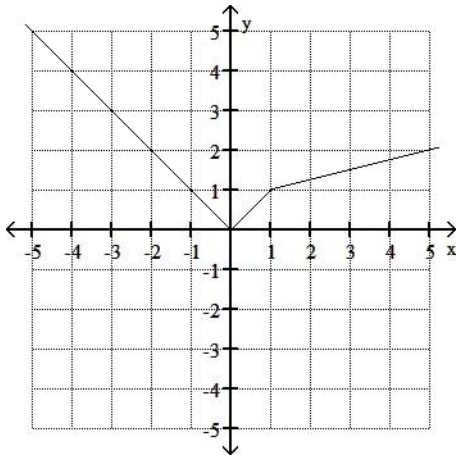
66) 

___
___

A) -1.6 B) 0.4 C) -0.4 D) 1.6

Answer: B

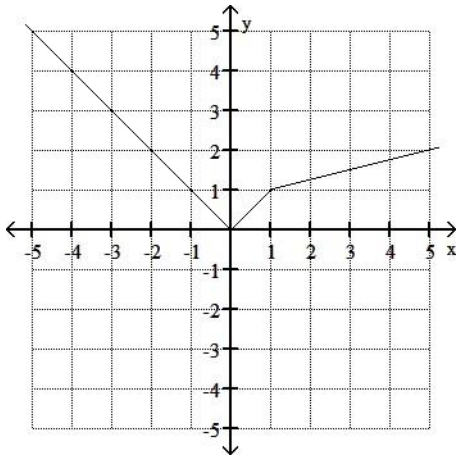
67) y = f(x). Find f(3). 67) _____



A) -3 B) 3 C) 1.5 D) 9

Answer: C

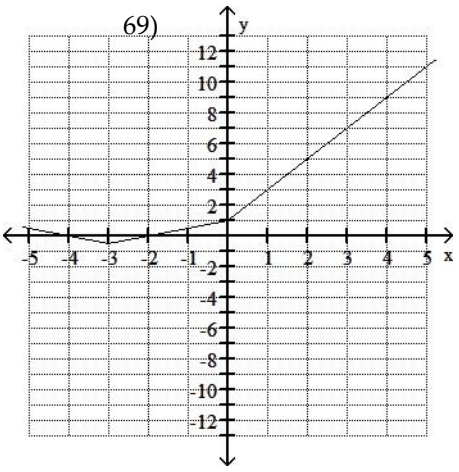
68) y = f(x). Find f(-3) 68) _____



A) 9 B) -3 C) 1.5 D) 3

Answer: D

69) y = f(x). Find f(3)

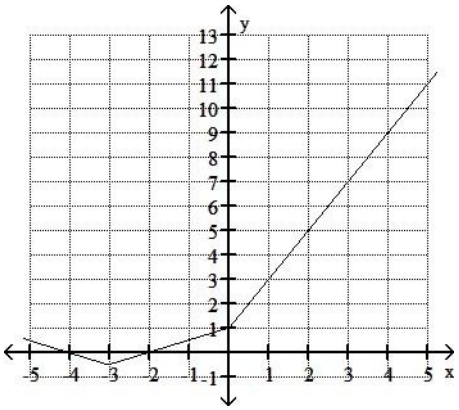
69) 

___
___

A) 7 B) 1 C) -7 D) 5

Answer: A

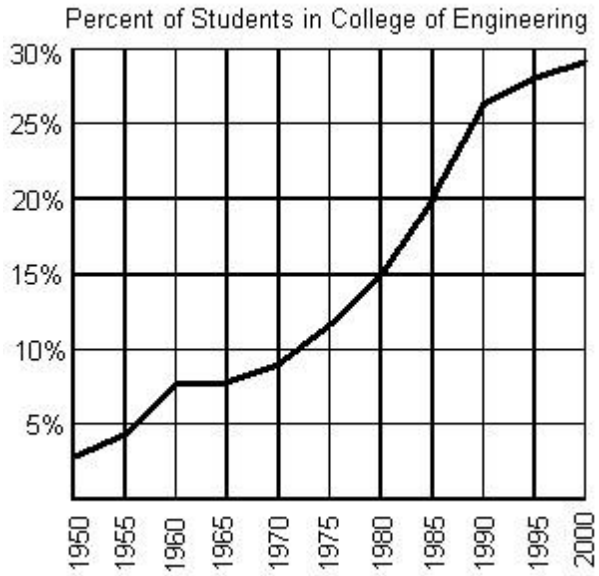
70) y = f(x). Find f(-4) 70) _____



A) 0 B) 9 C) 3 D) 4

Answer: A

The graph below shows the percentage of students enrolled in the College of Engineering at State University. Use the graph to answer the question.



71) Does the graph represent a function? 71) _____

A) no B) yes

Answer: B

72) If f represents the function, find f(1970). 72) _____

A) approximately 5.5% B) approximately 4%

C) approximately 9% D) approximately 11%

Answer: C

73) If f(x) = 12%, what year is represented by x? 73) _____

A) 1975 B) 1970 C) 1965 D) 1980

Answer: A

74) Between what two years is the difference in function values equal to 5%? 74) _____

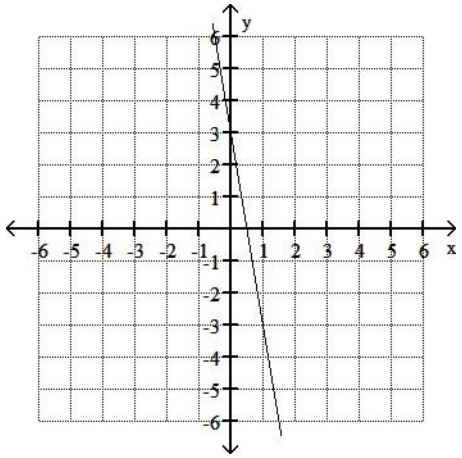
A) between 1970 and 1975 B) between 1980 and 1985

C) between 1985 and 1990 D) between 1960 and 1965

Answer: B

Use the graph to determine the function's domain and range.

75) 75) _____



A) domain: (-∞, ∞)
range: (-∞, ∞)

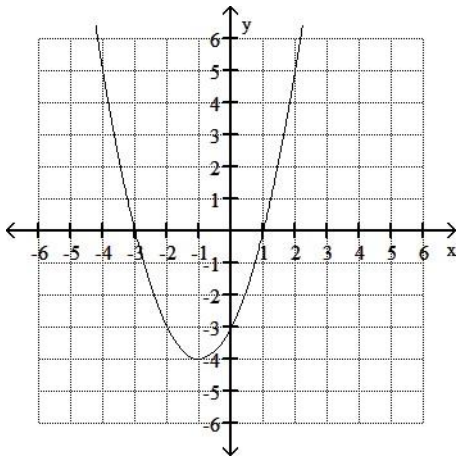
B) domain: $x = \frac{1}{2}$
range: (-∞, ∞)

C) domain: (-∞, ∞)
range: y = 3

D) domain: $x = \frac{1}{2}$
range: y = 3

Answer: A

76) 76)



_____

A) domain: (-∞, ∞)
range: (-∞, ∞)

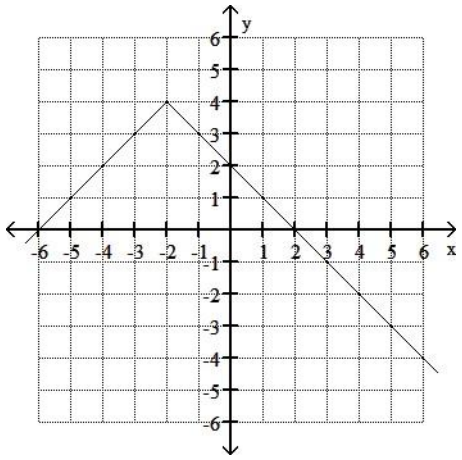
B) domain: (-∞, ∞)
range: [-4, ∞)

C) domain: (-∞, -1) or (-1, ∞)
range: (-∞, -4) or (-4, ∞)

D) domain: [-1, ∞)
range: [-4, ∞)

Answer: B

77) 77) _____



A) domain: (-∞, -2) or (-2, ∞)
range: (-∞, 4) or (4, ∞)

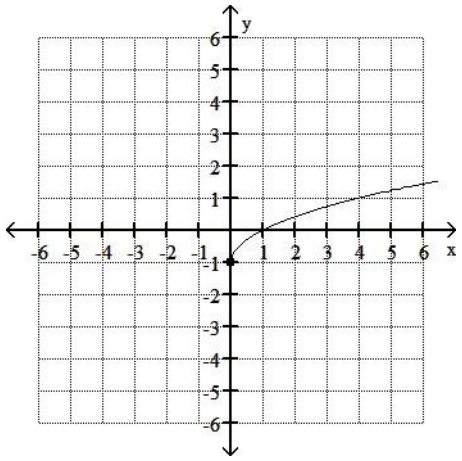
B) domain: (-∞, -2]
range: (-∞, 4]

C) domain: (-∞, ∞)
range: (-∞, 4]

D) domain: (-∞, ∞)
range: (-∞, ∞)

Answer: C

78) 78) _____



A) domain: [0, ∞)
range: (-∞, ∞)

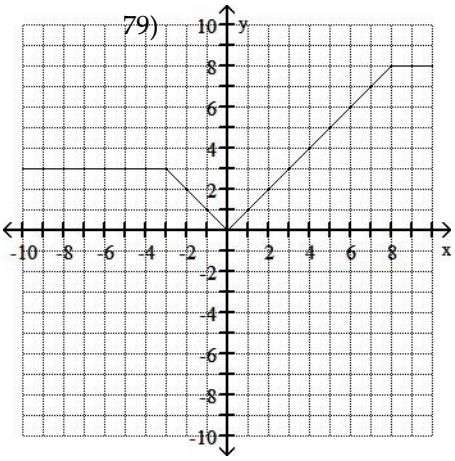
B) domain: [0, ∞)
range: [0, ∞)

C) domain: (-∞, ∞)
range: [-1, ∞)

D) domain: [0, ∞)
range: [-1, ∞)

Answer: D

79)

79) 

___
___

A) domain: [3, 8]
range: (-∞, ∞)

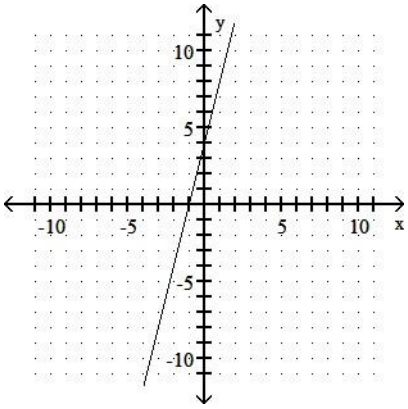
B) domain: (-∞, ∞)
range: [3, 8]

C) domain: [0, 8]
range: (-∞, ∞)

D) domain: (-∞, ∞)
range: [0, 8]

Answer: D

Identify the intercepts.

80) 

80) _____

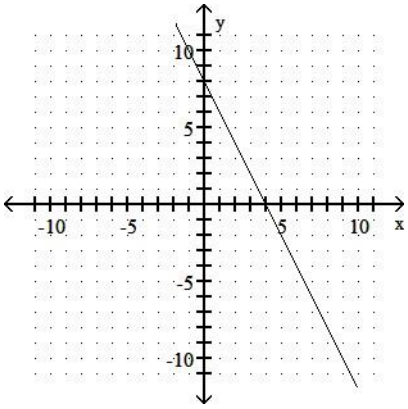
A) (-4, 0), (0, 4)

B) (-1, 0), (0, 4)

C) (-1, 0), (0, -4)

D) (1, 0), (0, 4)

Answer: B

81) 

81) _____

A) (4, 0), (0, 8)

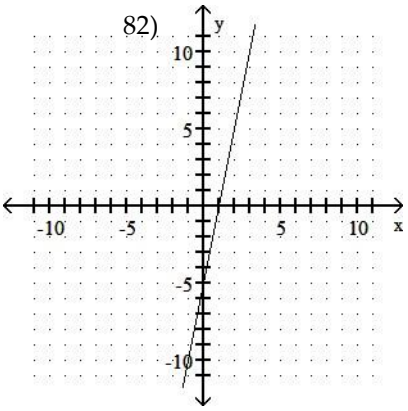
B) (-4, 0), (0, 8)

C) (-8, 0), (0, 8)

D) (4, 0), (0, -8)

Answer: A

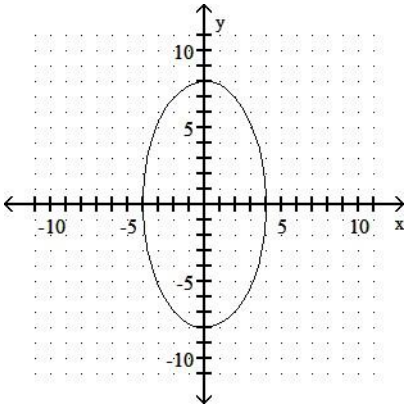
82)

82) 

___
___

A) (1, 0), (0, -5) B) (-5, 0), (0, 5) C) (-1, 0), (0, -5) D) (1, 0), (0, 5)

Answer: A

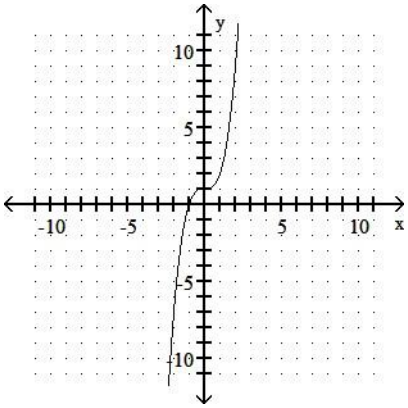
83) 

83) _____

A) (8, 0), (-8, 0), (0, 4), (0, -4) B) (4, 0), (-4, 0)

C) (0, 8), (0, -8) D) (4, 0), (-4, 0), (0, 8), (0, -8)

Answer: D

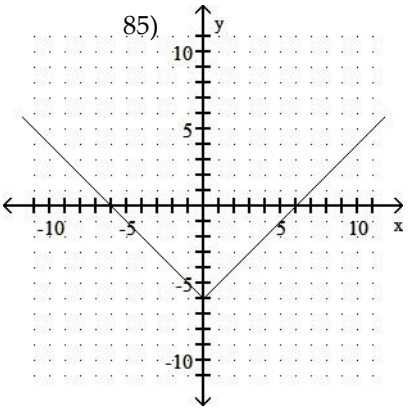
84) 

84) _____

A) (1, 0), (0, 1) B) (-1, -1), (1, 1) C) (-1, 0), (0, 1) D) (-1, 0), (0, -1)

Answer: C

85)

85) 

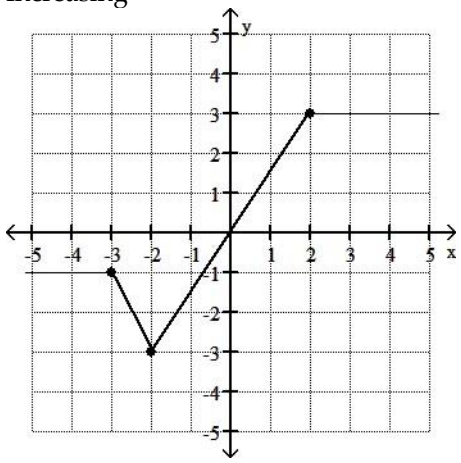
___
___

A) (6, 0), (-6, 0), (0, 0)
B) (0, -6)
C) (6, 0), (-6, 0)
D) (6, 0), (-6, 0), (0, -6)

Answer: D

Identify the intervals where the function is changing as requested.

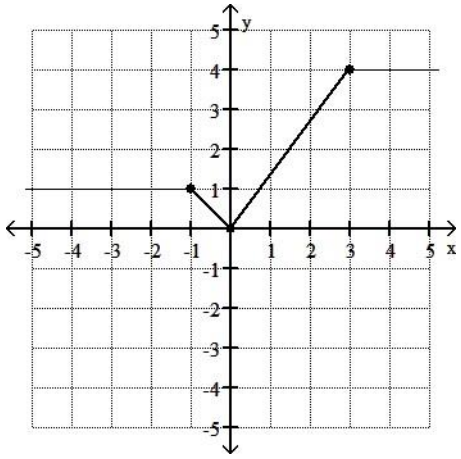
86) Increasing 86) _____



A) (-3, ∞)
B) (-3, 3)
C) (-2, ∞)
D) (-2, 2)

Answer: D

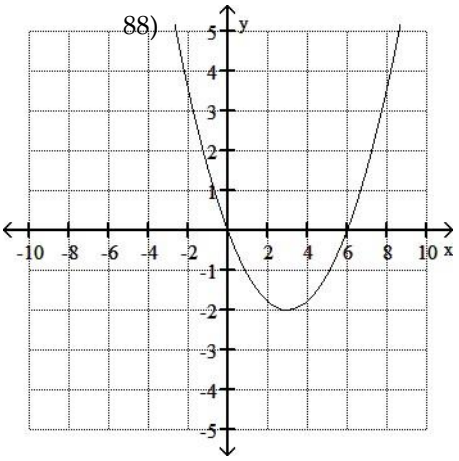
87) Constant 87) _____



A) (-∞, -1) or (3, ∞)
B) (-∞, 0)
C) (-1, 0)
D) (3, ∞)

Answer: A

88) Increasing

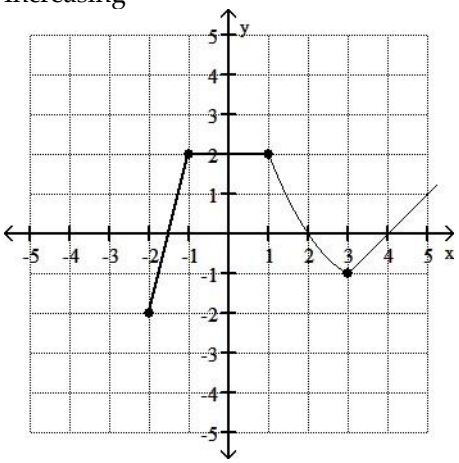
88) 

___
___

A) (-2, ∞) B) (-2, 0) C) (3, ∞) D) (3, 6)

Answer: C

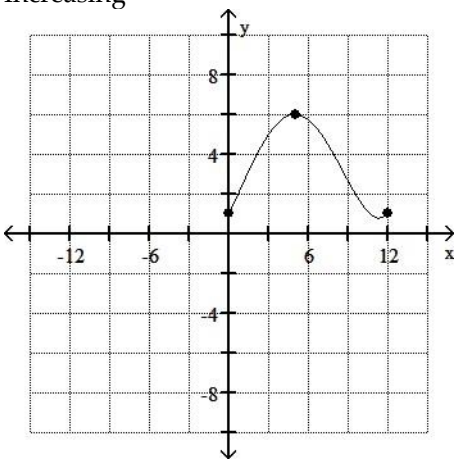
89) Increasing 89) _____



A) (-1, ∞) B) (-2, -1) or (3, ∞) C) (-1, 3) D) (-2, 1)

Answer: B

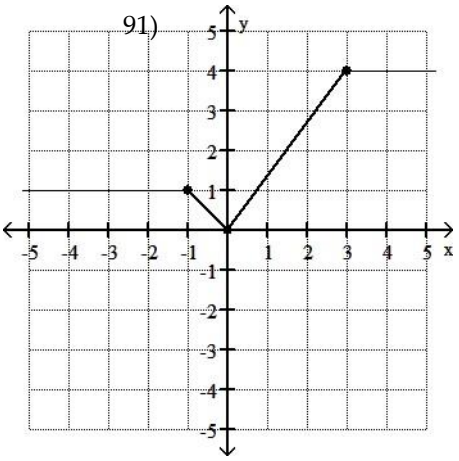
90) Increasing 90) _____



A) (1, 6) B) (0, 5) C) (1, 5) D) (0, 6)

Answer: B

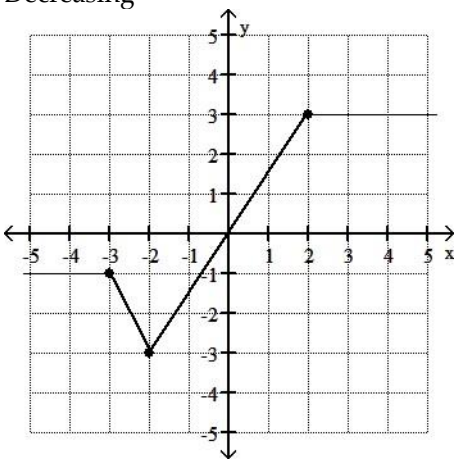
91) Increasing

91) 

___
___

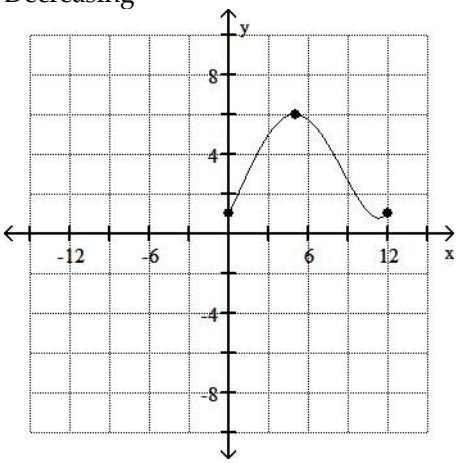
A) (-1, 0) B) (0, 3) C) (-∞, -1) D) (-∞, 0)
Answer: B

92) Decreasing 92) _____



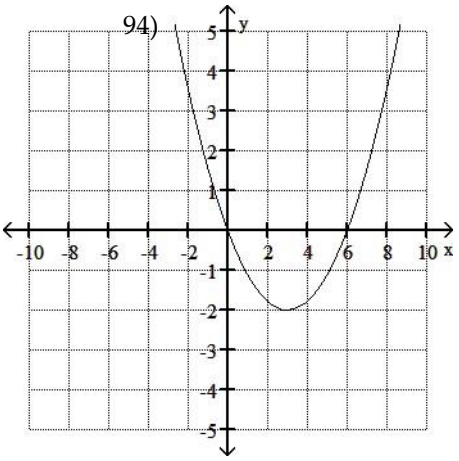
A) (-∞, -2) B) (0, -2) C) (-∞, -3) D) (-3, -2)
Answer: D

93) Decreasing 93) _____



A) (5, 1) B) (5, 12) C) (6, 1) D) (6, 12)
Answer: B

94) Decreasing

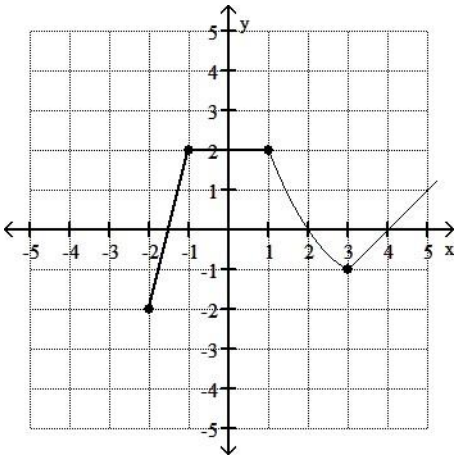
94) 

___
___

A) (-∞, 3) B) (0, -2) C) (-∞, -2) D) (0, 3)

Answer: A

95) Constant 95) _____

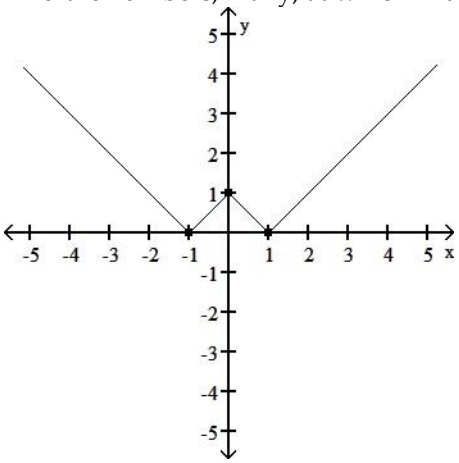


A) (1, 2) B) (-2, -1) C) (-1, 1) D) (2, ∞)

Answer: C

The graph of a function f is given. Use the graph to answer the question.

96) Find the numbers, if any, at which f has a relative maximum. What are the relative maxima? 96) _____



A) f has a relative maximum at x = 0; the relative maximum is 1

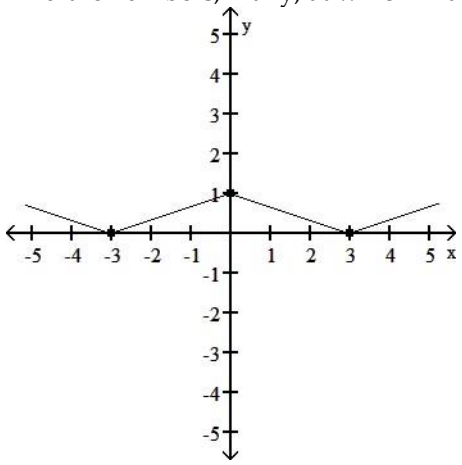
B) f has a relative maximum at x = 1; the relative maximum is 1

C) f has a relative maximum at x = -1 and 1; the relative maximum is 0

D) f has no relative maximum

Answer: A

97) Find the numbers, if any, at which f has a relative minimum. What are the relative minima? 97) _____

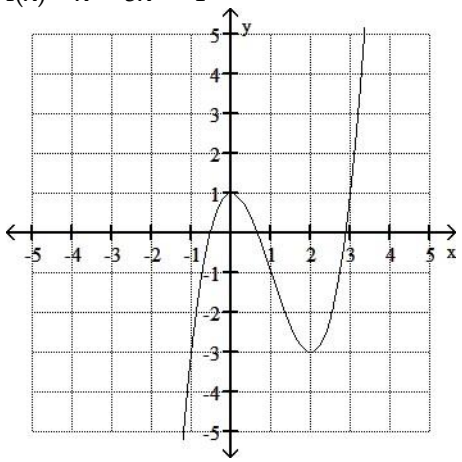


A) f has a relative minimum at x = -3; the relative minimum is 0
B) f has a relative minimum at x = 0; the relative minimum is 1
C) f has a relative minimum at x = -3 and 3; the relative minimum is 0
D) f has no relative minimum

Answer: C

Use the graph of the given function to find any relative maxima and relative minima.

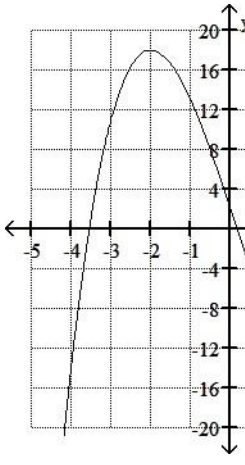
98) $f(x) = x^3 - 3x^2 + 1$ 98) _____



A) maximum: (0, 1); minimum: none
B) maximum: (0, 1); minimum: (2, -3)
C) no maximum or minimum
D) maximum: none; minimum: (2, -3)

Answer: B

99) $f(x) = x^3 - 12x + 2$



99) _____

A) maximum: (2, -14); minimum: (-2, 18)
B) no maximum or minimum
C) minimum: (2, -14); maximum: (-2, 18)
D) maximum: (-2, 18) and (0, 0); minimum: (2, -14)

Answer: C

Determine whether the given function is even, odd, or neither.

100) $f(x) = x^3 - 5x$ 100) _____

A) Even B) Neither C) Odd

Answer: C

101) $f(x) = 5x^2 + x^4$ 101) _____

A) Even B) Neither C) Odd

Answer: A

102) $f(x) = x5 - x4$ 102) _____

A) Neither B) Odd C) Even

Answer: A

103) $f(x) = -5x^5 + x^3$ 103) _____

A) Even B) Neither C) Odd

Answer: C

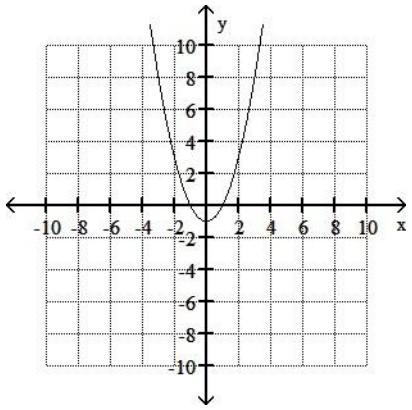
104) $f(x) = x^3 + x^2 + 4$ 104) _____

A) Odd B) Even C) Neither

Answer: C

Use possible symmetry to determine whether the graph is the graph of an even function, an odd function, or a function that is neither even nor odd.

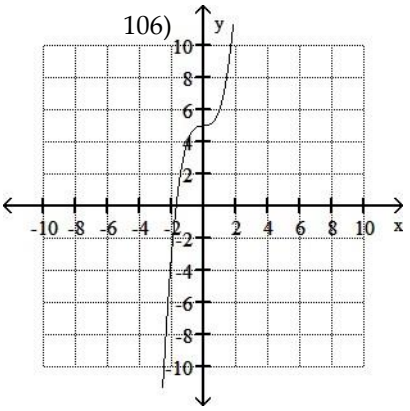
105) 105) _____



A) Odd B) Neither C) Even

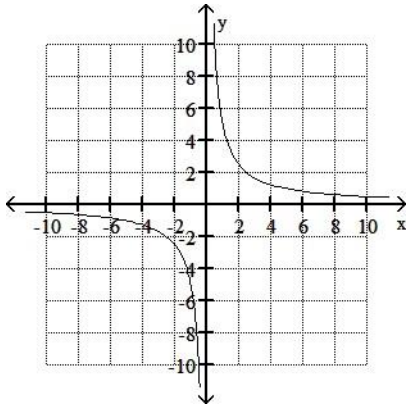
Answer: C

106)

106) 

A) Even B) Odd C) Neither

Answer: C

107) 

A) Even B) Odd C) Neither

Answer: B

Evaluate the piecewise function at the given value of the independent variable.

108) $f(x) = \begin{cases} 3x - 5 & \text{if } x < 5 \\ -5x + 2 & \text{if } x \geq 5 \end{cases}$; f(7)

A) -33 B) 23 C) -38 D) -40

Answer: A

109) $f(x) = \begin{cases} x - 5 & \text{if } x > -2 \\ -(x - 5) & \text{if } x \leq -2 \end{cases}$; f(-5)

A) -15 B) 10 C) -5 D) -10

Answer: B

110) $g(x) = \begin{cases} \dfrac{x^2 - 1}{x + 8} & \text{if } x \neq -8 \\ x - 4 & \text{if } x = -8 \end{cases}$; g(-7)

A) 48 B) - 8 C) -7 D) -11

Answer: A

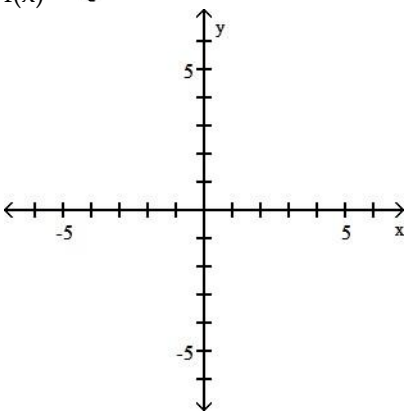
111) $h(x) = \begin{cases} \dfrac{x^2 - 1}{x + 4} & \text{if } x \neq -4 \\ x + 6 & \text{if } x = -4 \end{cases}$; h(-4)

A) 2 B) undefined C) -2 D) -10

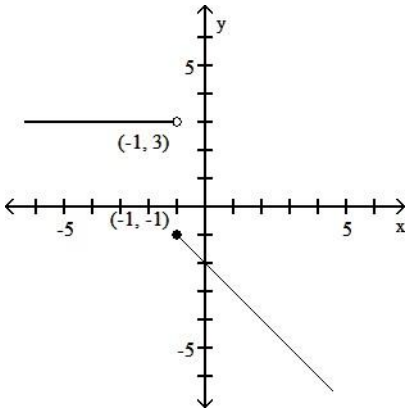
Answer: A

Graph the function.

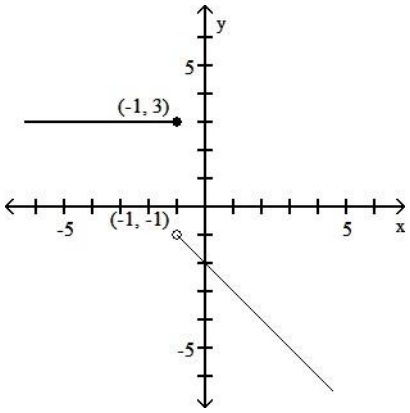
112) $f(x) = \begin{cases} x - 2 & \text{if } x < 1 \\ 3 & \text{if } x \geq 1 \end{cases}$ 112) _____



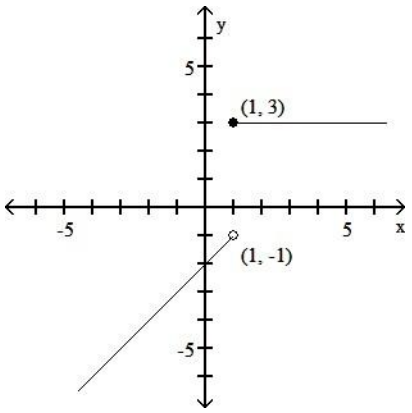
A)



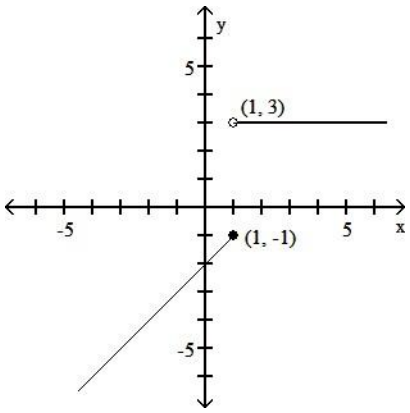
B)



C)



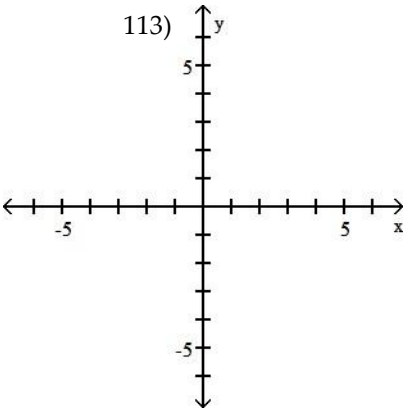
D)



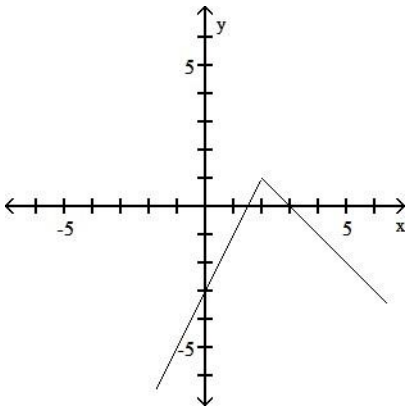
Answer: C

113) $f(x) = \begin{cases} -x + 3 & \text{if } x < 2 \\ 2x - 3 & \text{if } x \geq 2 \end{cases}$

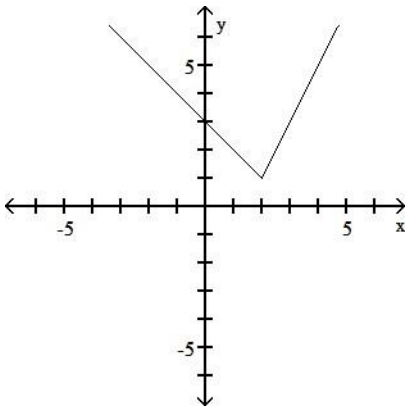
113)



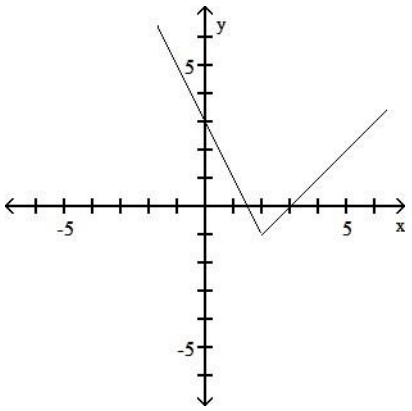
A)



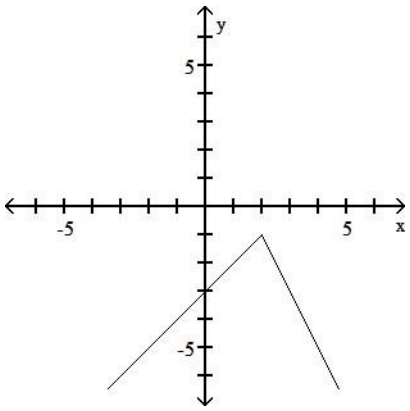
B)



C)



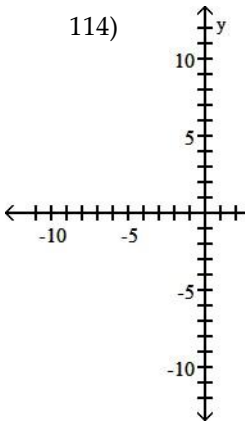
D)



Answer: B

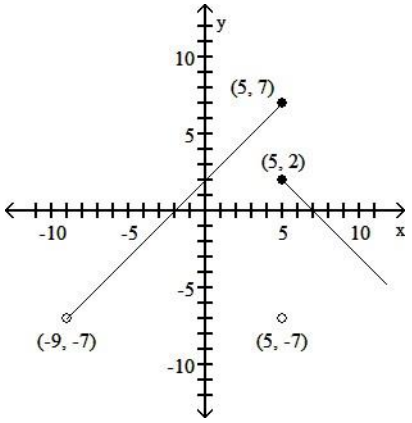
114) $f(x) = \begin{cases} x+2 & \text{if } -9 \le x < 5 \\ -7 & \text{if } x = 5 \\ -x+7 & \text{if } x > 5 \end{cases}$

114)

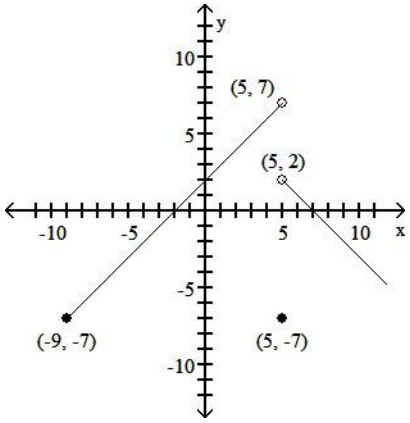


_____

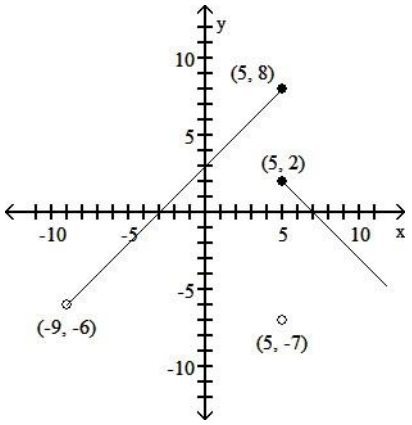
A)



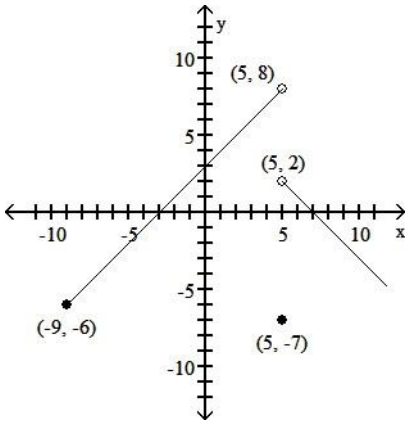
B)



C)



D)

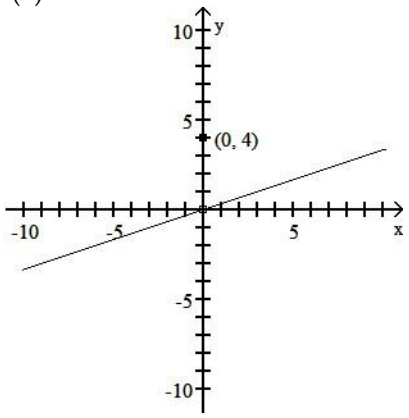


Answer: B

Based on the graph, find the range of y = f(x).

115) $f(x) = \begin{cases} \frac{1}{3}x & \text{if } x \neq 0 \\ 4 & \text{if } x = 0 \end{cases}$

115) _____



A) (-∞, 0) or (0, ∞)

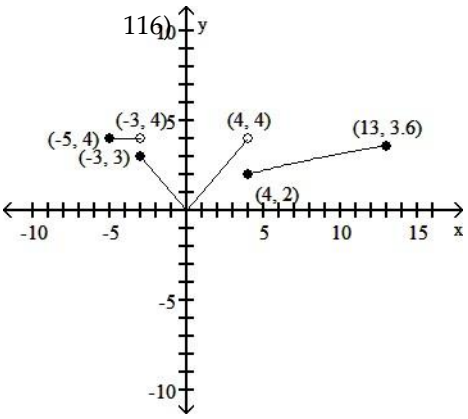
B) (-∞, 0) or {0} or (0, ∞)

C) (-∞, ∞)

D) (-10, 10)

Answer: A

116) $f(x) = \begin{cases} 4 & \text{if } -5 \leq x < -3 \\ |x| & \text{if } -3 \leq x < 4 \\ \sqrt{x} & \text{if } 4 \leq x \leq 13 \end{cases}$

116) 

____
_

A) [0, ∞) B) [0, 4) C) $[0, \sqrt{13}]$ D) [0, 4]

Answer: B

Solve the problem.

117) Suppose a car rental company charges $ 116 for the first day and $ 66 for each additional or partial day. Let S(x) represent the cost of renting a car for x days. Find the value of S(4.5). 117) _____

A) $ 413 B) $ 297 C) $ 347 D) $ 380

Answer: D

118) Suppose a life insurance policy costs $ 16 for the first unit of coverage and then $ 4 for each additional unit of coverage. Let C(x) be the cost for insurance of x units of coverage. What will 10 units of coverage cost? 118) _____

A) $ 56 B) $ 40 C) $ 24 D) $ 52

Answer: D

119) A salesperson gets a commission of $ 1400 for the first $10,000 of sales, and then $ 700 for each additional $10,000 or partial of sales. Let S(x) represent the commission on x dollars of sales. Find the value of
S(95,000). 119) _____

A) $ 7700 B) $ 6650 C) 8050 D) $ 7350

Answer: A

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

120) A gas company has the following rate schedule for natural gas usage in single-family residences: 120) _____

Monthly service charge	$8.80
Per therm service charge	
1st 25 therms	$0.6686/therm
Over 25 therms	$0.85870/therm

What is the charge for using 25 therms in one month?
What is the charge for using 45 therms in one month?
Construct a function that gives the monthly charge C for x therms of gas.
Answer: $25.52
$42.69

$$C(x) = \begin{cases} 8.8 + 0.6686x & \text{if } 0 \le x \le 25 \\ 25.515 + 0.133219(x - 25) & \text{if } x > 25 \end{cases}$$

121) An electric company has the following rate schedule for electricity usage in single-family residences: 121) _____

Monthly service charge	$4.93
Per kilowatt service charge	
1st 300 kilowatts	$0.11589/kW
Over 300 kilowatts	$0.13321/kW

What is the charge for using 300 kilowatts in one month?
What is the charge for using 375 kilowatts in one month?
Construct a function that gives the monthly charge C for x kilowatts of electricity.
Answer: $39.70
$49.69

$$C(x) = \begin{cases} 4.93 + 0.11589x & \text{if } 0 \le x \le 300 \\ 39.697 + 0.13321(x - 300) & \text{if } x > 300 \end{cases}$$

122) One Internet service provider has the following rate schedule for high-speed Internet service: 122) _____

Monthly service charge	$18.00
1st 50 hours of use	free
Next 50 hours of use	$0.25/hour
Over 100 hours of use	$1.00/hour

What is the charge for 50 hours of high-speed Internet use in one month?
What is the charge for 75 hours of high-speed Internet use in one month?
What is the charge for 135 hours of high-speed Internet use in one month?
Answer: $18.00
$24.25
$65.50

123) The wind chill factor represents the equivalent air temperature at a standard wind speed that would produce the same heat loss as the given temperature and wind speed. One formula for computing the equivalent temperature is 123) _____

$$W(t) = \begin{cases} t & \text{if } 0 \le v < 1.79 \\ 33 - \dfrac{(10.45 + 10\sqrt{v} - v)(33 - t)}{22.04} & \text{if } 1.79 \le v < 20 \\ 33 - 1.5958(33 - t) & \text{if } v \ge 20 \end{cases}$$

where v represents the wind speed (in meters per second) and t represents the air temperature $(^{\circ}C)$. Compute the wind chill for an air temperature of 15°C and a wind speed of 12 meters per second. (Round the answer to one decimal place.)
Answer: 6.0°C

124) A cellular phone plan had the following schedule of charges:

Basic service, including 100 minutes of calls	$20.00 per month

What is the charge for using 100 minutes of c
Additional 200 minutes c
2nd 100 minutes of

calls in one month? What is the charge for 250 minutes of calls in one month? Construct a function that relates the monthly charge C for x minutes of calls.

124) ____
____
____

Answer: $27.50
$32.50;

$$C(x) = \begin{cases} 20 & \text{if } 0 \le x \le 100 \\ 20 + 0.075(x - 100) & \text{if } 100 < x \le 200 \\ 27.50 + 0.1(x - 200) & \text{if } x > 200 \end{cases}$$

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find and simplify the difference quotient $\frac{f(x+h) - f(x)}{h}, h \neq 0$ for the given function.

125) $f(x) = 7x + 3$ 125) _____

A) $7 + \frac{14(x+3)}{h}$ B) 7 C) $7 + \frac{6}{h}$ D) 0

Answer: B

126) $f(x) = 5x^2$ 126) _____

A) 5(2x+h) B) $\frac{5(2x^2 + 2xh + h^2)}{h}$

C) $\frac{10}{h} + x + 5h$ D) 5

Answer: A

127) $f(x) = 6$ 127) _____

A) 0 B) $1 + \frac{12}{h}$ C) 6 D) 1

Answer: A

128) $f(x) = \frac{1}{8x}$ 128) _____

A) $\frac{-1}{x\,(x+h)}$ B) $\frac{-1}{8x\,(x+h)}$ C) 0 D) $\frac{1}{8x}$

Answer: B

129) $f(x) = x^2 + 4x + 3$ 129) _____

A) $2x + h + 4$ B) 1

C) $2x + h + 3$ D) $\frac{2x^2 + 2x + 2xh + h^2 + h + 6}{h}$

Answer: A

Find the slope of the line that goes through the given points.

130) (6, 2), (-1, -9) 130) _____

A) $-\frac{11}{7}$ B) $\frac{7}{11}$ C) $-\frac{7}{5}$ D) $\frac{11}{7}$

Answer: D

131) (-8, 3), (-8, -5) 131) _____

A) $-\frac{1}{2}$ B) Undefined C) $\frac{1}{8}$ D) 0

Answer: B

132) (9, -8), (2, -8) 132) _____

A) $\frac{16}{7}$ B) Undefined C) $-\frac{16}{11}$ D) 0

Answer: D

133) (18, 1), (-18, 3) 133) _____

A) $\frac{4}{0}$ B) $\frac{1}{18}$ C) $-\frac{1}{18}$ D) - 18

Answer: C

134) (9, 1), (-5, -7) 134) _____

A) $\frac{1}{4}$ B) $\frac{7}{4}$ C) $\frac{4}{7}$ D) 4

Answer: C

135) (-3, 1), (-6, 1) 135) _____

A) 2 B) 1 C) 0 D) 8

Answer: C

136) 136) _____

(-3, 5) and ($\frac{1}{3}$, -1)

A) $\frac{6}{5}$ B) $-\frac{9}{5}$ C) $\frac{5}{9}$ D) $-\frac{5}{9}$

Answer: B

137) 137) _____

($\frac{1}{4}$, -2) and ($\frac{1}{4}$, -4)

A)

A) $\frac{24}{7}$ B) $\frac{8}{7}$ C) Undefined D) $\frac{7}{8}$

Answer: C

Use the given conditions to write an equation for the line in point-slope form.

138) Slope = 2, passing through (2, 3) 138) _____

A) y = 2x - 1 B) y + 3 = 2(x + 2) C) y - 3 = 2(x - 2) D) x - 3 = 2(y - 2)

Answer: C

139) Slope = 2, passing through (-3, 4) 139) _____

A) y - 4 = 2(x + 3) B) y = 2x + 10 C) x - 4 = 2(y + 3) D) y + 4 = 2(x - 3)

Answer: A

140) Slope = $\frac{6}{7}$, passing through (5, 8) 140) _____

A) y = $\frac{6}{7}$x + 5 B) y + 8 = $\frac{6}{7}$(x + 5) C) y - 8 = $\frac{6}{7}$(x - 5) D) x - 8 = $\frac{6}{7}$(y - 5)

Answer: C

141) Passing through (2, 2) and (5, 4) 141) _____

A) y + 2 = $\frac{2}{3}$(x + 2) or y + 4 = $\frac{2}{3}$(x + 5)

B) y - 2 = $\frac{2}{3}$(x - 5) or y - 4 = $\frac{2}{3}$(x - 2)

C) y - 2 = 2(x + 2) or y - 4 = 5(x - 2)

D) y - 2 = $\frac{2}{3}$(x - 2) or y - 4 = $\frac{2}{3}$(x - 5)

Answer: D

142) Passing through (-3, -6) and (-5, -7) 142) _____

A) y + 6 = $\frac{1}{2}$(x + 5) or y + 7 = $\frac{1}{2}$(x + 3)

B) y + 6 = $\frac{1}{2}$(x + 3) or y + 7 = $\frac{1}{2}$(x + 5)

C) y + 6 = $\frac{1}{2}$x - 3 or y + 7 = $\frac{1}{2}$x + 6

D) y - 6 = $\frac{1}{2}$(x - 3) or y - 7 = $\frac{1}{2}$(x - 5)

Answer: B

143) Passing through (1, -6) with x-intercept = -1 143) _____

A) y + 6 = - 3(x - 1) or y = - 3(x - 1) B) y + 6 = - 3(x - 1) or y = - 3(x + 1)

C) y - 6 = - 3(x + 1) or y = - 3(x + 1) D) y - 1 = - 3x or y - 6 = - 3(x + 1)

Answer: B

Use the given conditions to write an equation for the line in slope-intercept form.

144) Slope = -3, passing through (5, 5) 144) _____

A) $y - 5 = x - 5$ B) $y - 5 = -3x - 5$ C) $y = -3x - 20$ D) $y = -3x + 20$

Answer: D

145) Slope = -4, passing through (-8, 5) 145) _____

A) $y = -4x - 27$ B) $y - 5 = x + 8$ C) $y = -4x + 27$ D) $y - 5 = -4x + 8$

Answer: A

146) Slope = $\frac{7}{8}$, passing through (6, 2) 146) _____

A) $y = mx - \frac{13}{4}$ B) $y = \frac{7}{8}x + 6$ C) $y = \frac{7}{8}x + \frac{13}{4}$ D) $y = \frac{7}{8}x - \frac{13}{4}$

Answer: D

147) Slope = $\frac{5}{6}$, y-intercept = 2 147) _____

A) $f(x) = \frac{5}{6}x + 2$ B) $f(x) = \frac{5}{6}x - 2$ C) $f(x) = \frac{6}{5}x + \frac{12}{5}$ D) $f(x) = -\frac{5}{6}x - 2$

Answer: A

148) Passing through (5, 4) and (3, 3) 148) _____

A) $y - 4 = \frac{1}{2}(x - 5)$ B) $y = -\frac{1}{2}x + \frac{3}{2}$ C) $y = \frac{1}{2}x + \frac{3}{2}$ D) $y = mx + \frac{3}{2}$

Answer: C

149) Passing through (-5, -3) and (7, -6) 149) _____

A) $y = mx - \frac{17}{4}$ B) $y = \frac{1}{4}x - \frac{17}{4}$

C) $y = -\frac{1}{4}x - \frac{17}{4}$ D) $y + 3 = -\frac{1}{4}(x + 5)$

Answer: C

150) Passing through (-2, -8) and (-5, -2) 150) _____

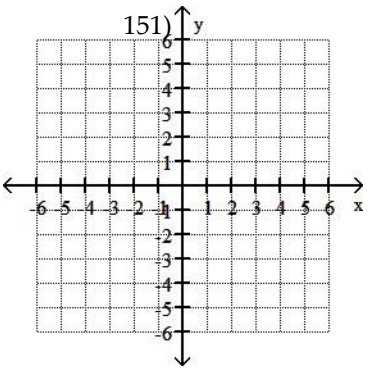
A) $y + 8 = -2(x + 2)$ B) $y = -2x - 12$

C) $y = 2x - 12$ D) $y = mx - 12$

Answer: B

Graph the line whose equation is given.

151) $y = 2x - 2$

151) 

____
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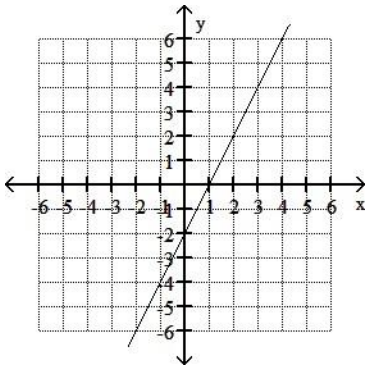
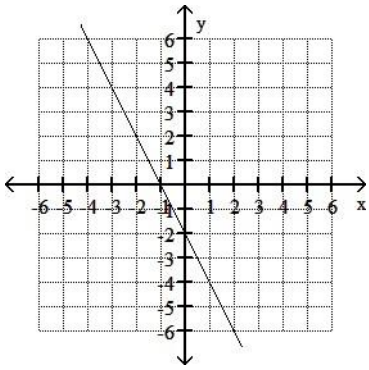
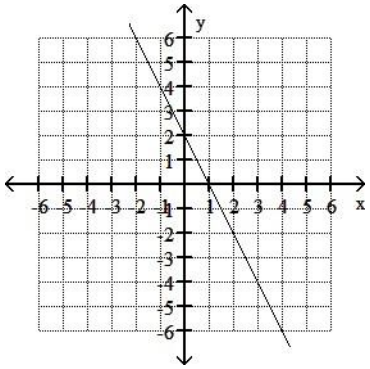
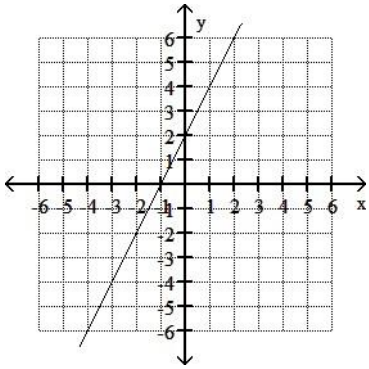
A) 

B) 

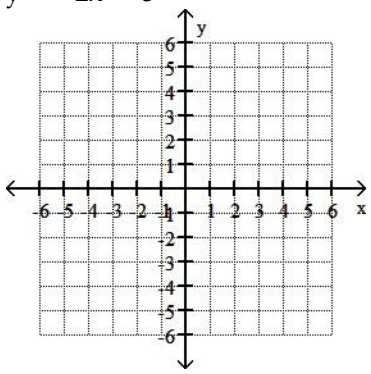
C) 

D) 

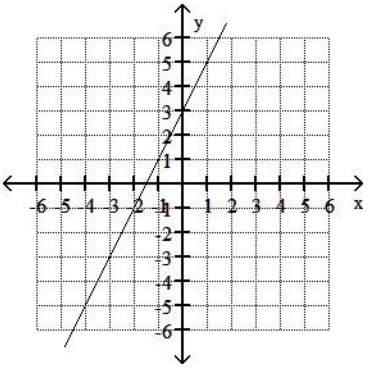
Answer: A

152) y = -2x - 3

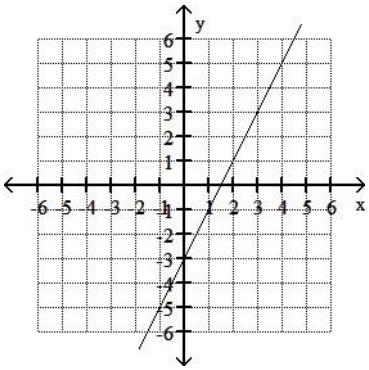
152) _____



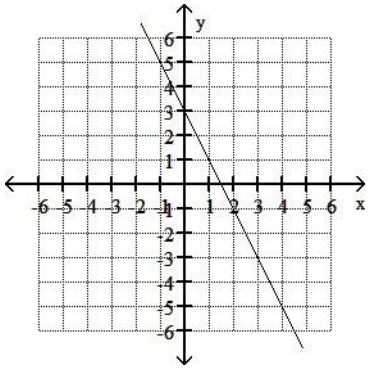
A)



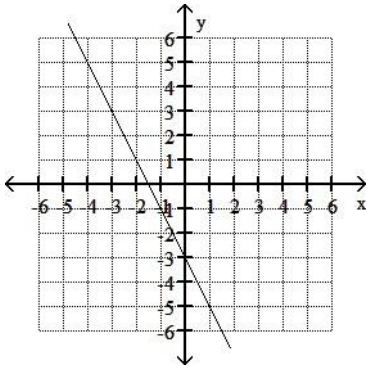
B)



C)



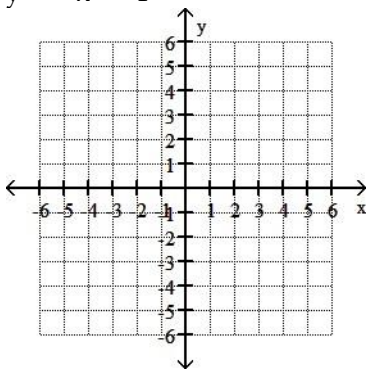
D)



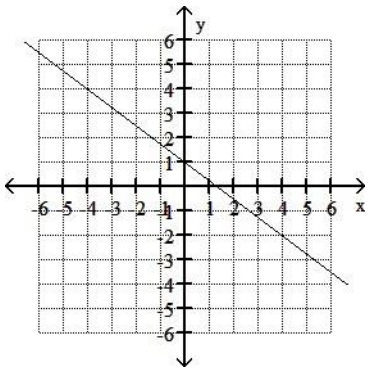
Answer: D

153) $y = \frac{3}{4}x + 1$

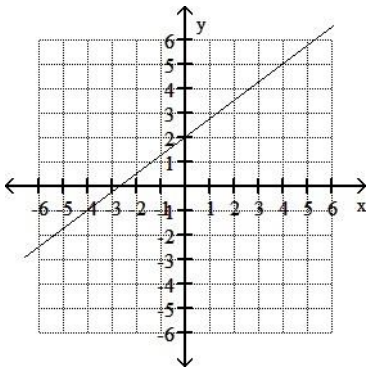
153) _____



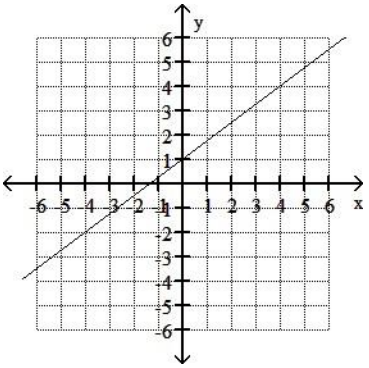
A)



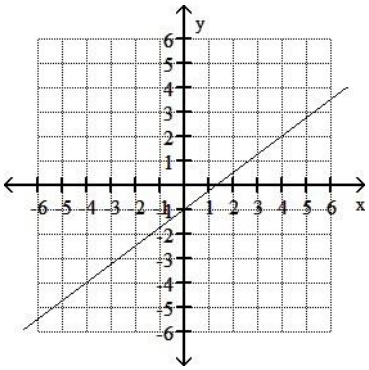
B)



C)

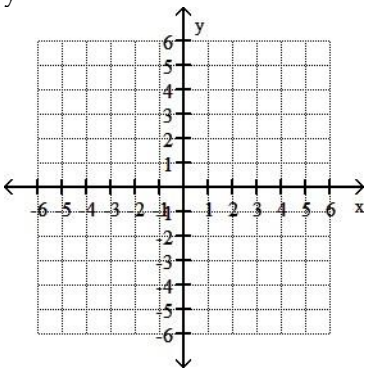


D)

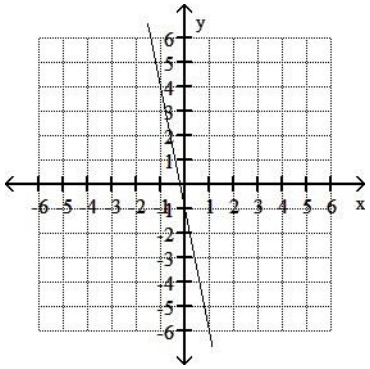


Answer: C

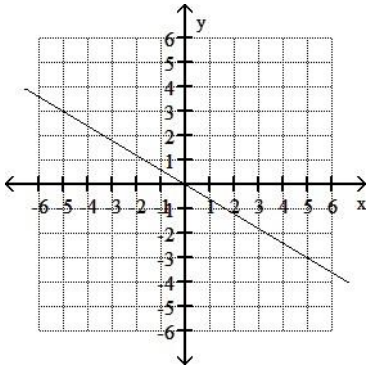
154) $y = -\frac{3}{5}x - 1$ 154) _____



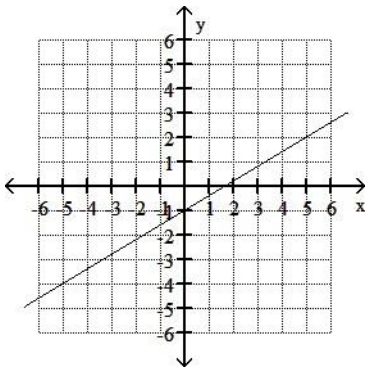
A)



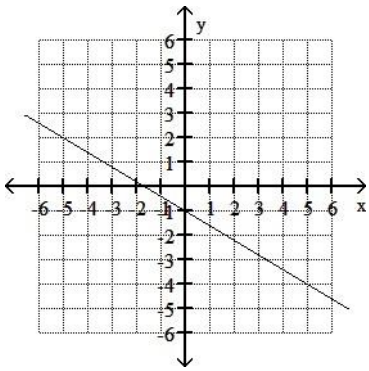
B)



C)



D)

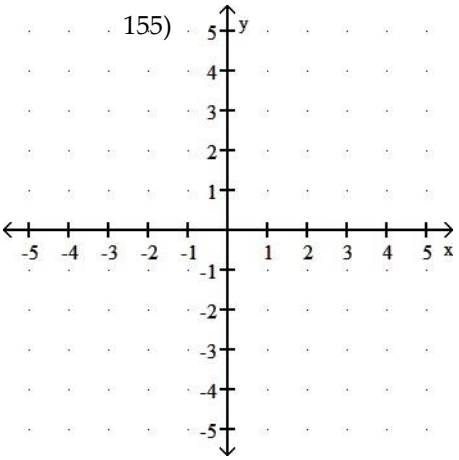


Answer: D

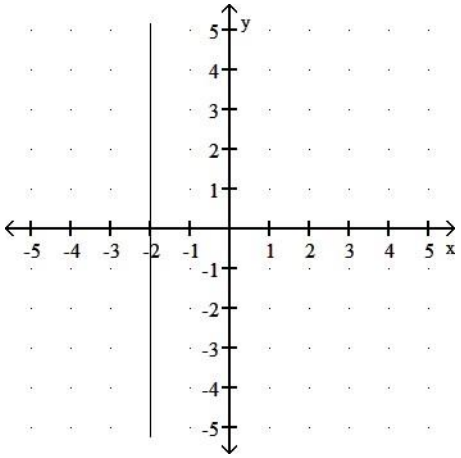
Graph the equation in the rectangular coordinate system.

155) x = -2

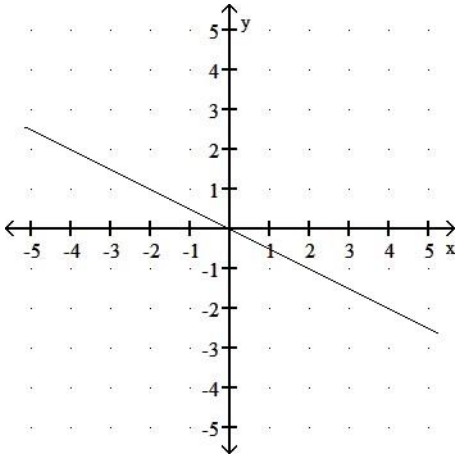
155)



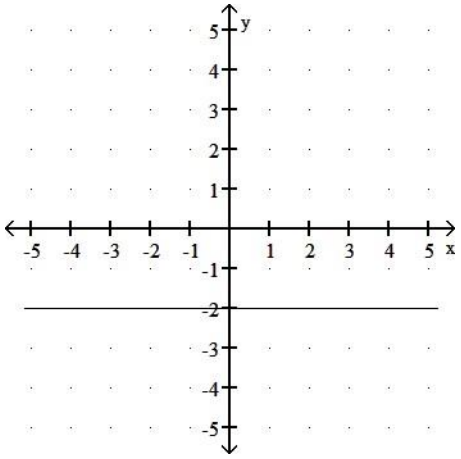
A)



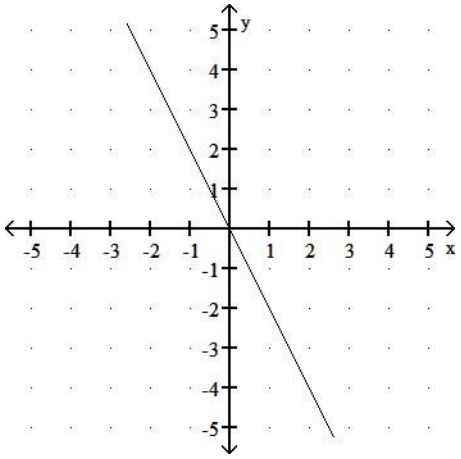
B)



C)



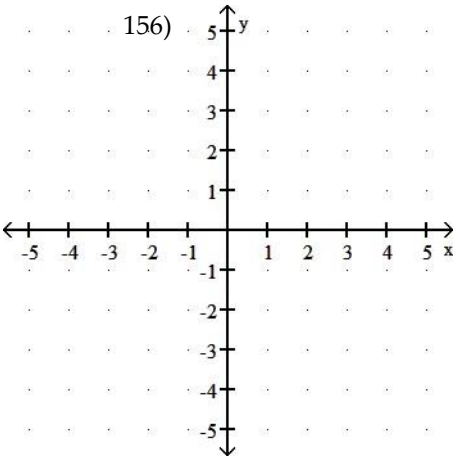
D)



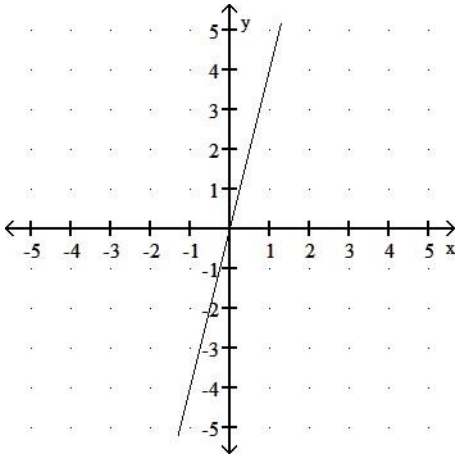
Answer: A

156) y = 4

156)



A)



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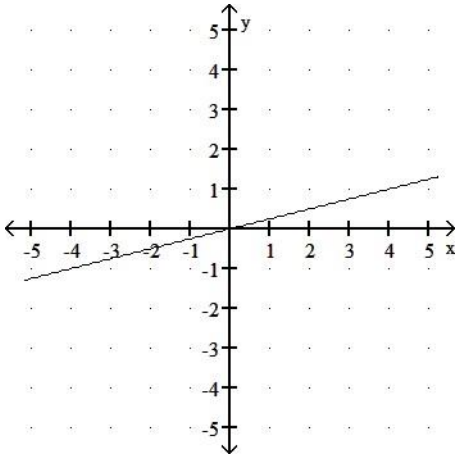
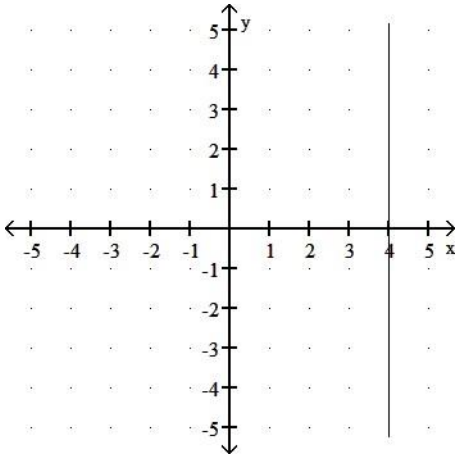
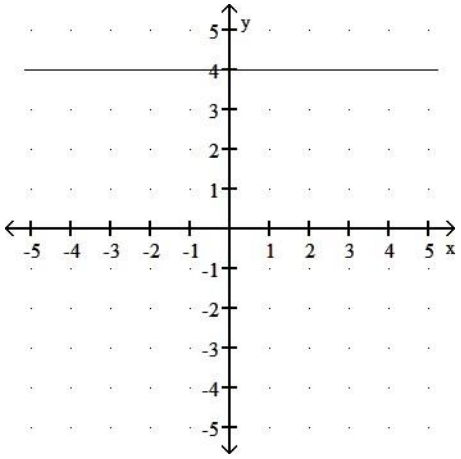


C)

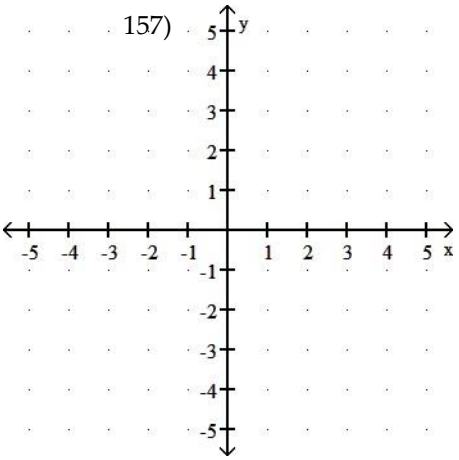


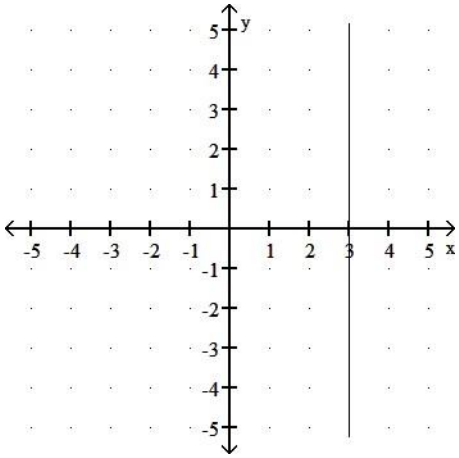
D)

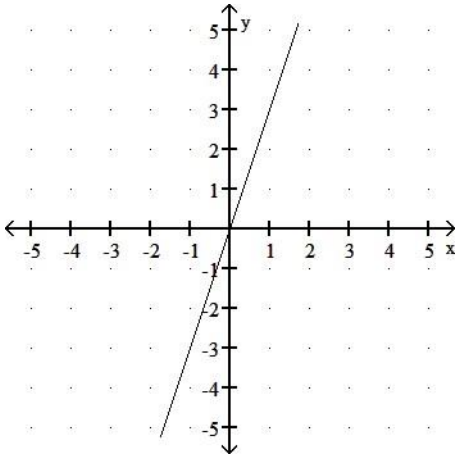


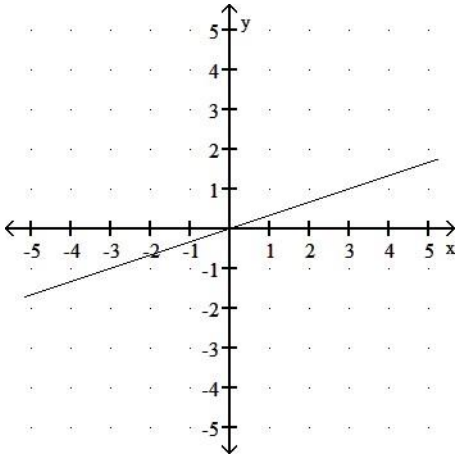
Answer: D

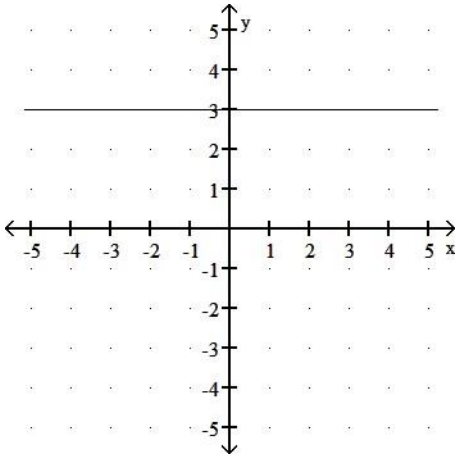
157) f(x) = 3

157) 

A) 

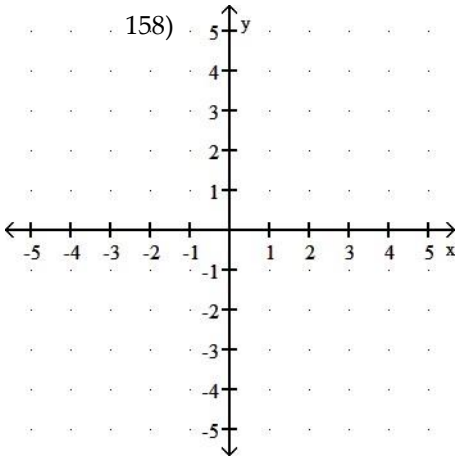
B) 

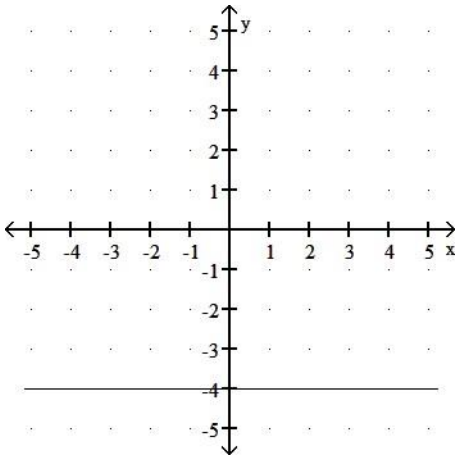
C) 

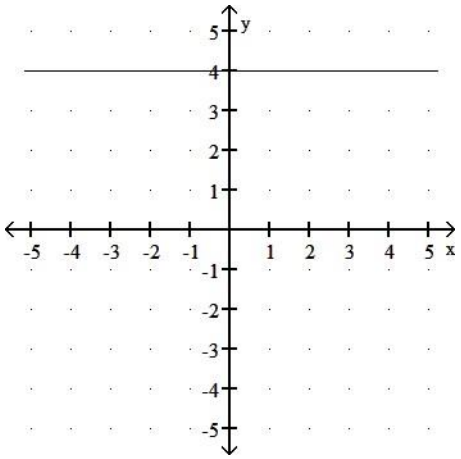
D) 

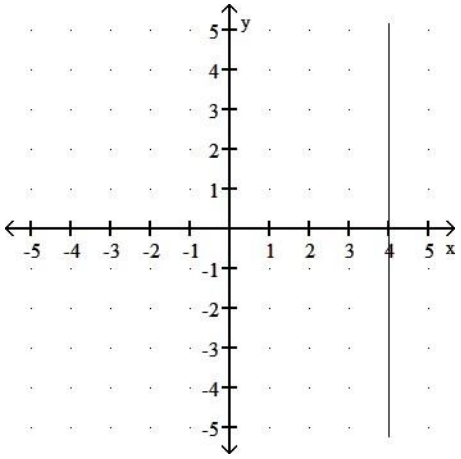
Answer: D

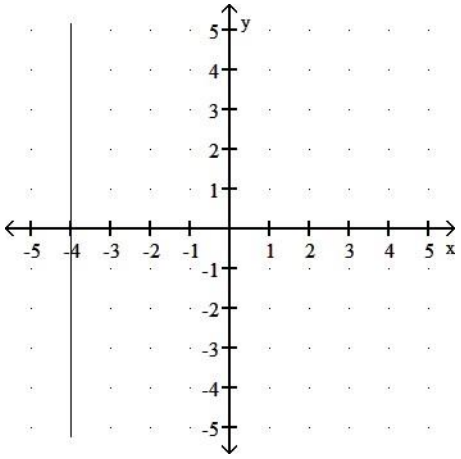
158) 3y = 12

158) 

A) 

B) 

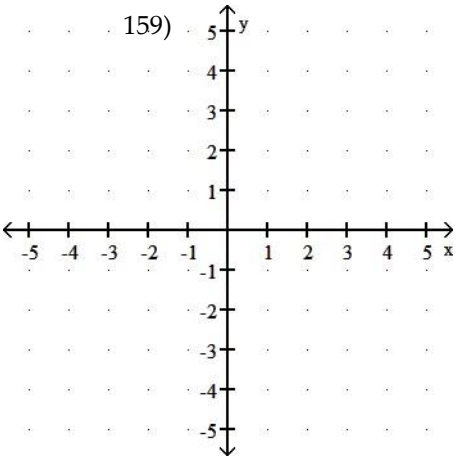
C) 

D) 

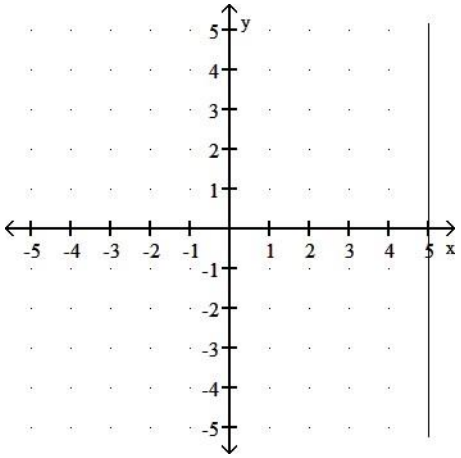
Answer: B

159) 5x = -25

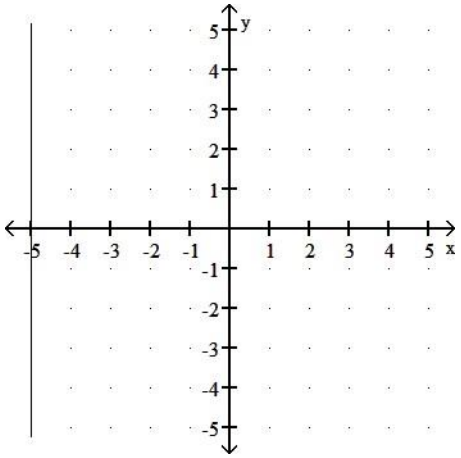
159)



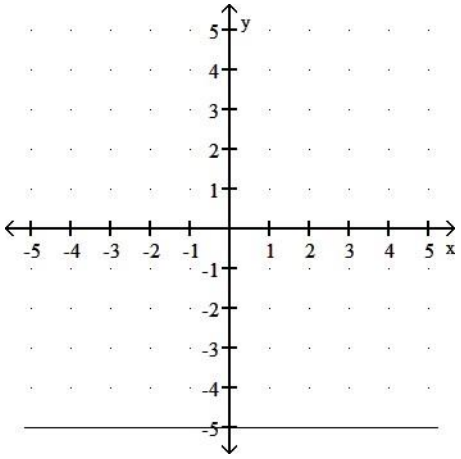
A)



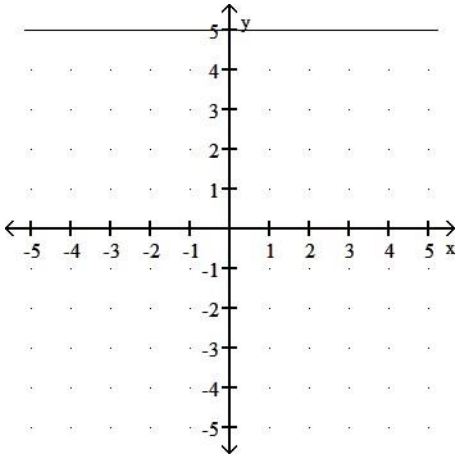
B)



C)

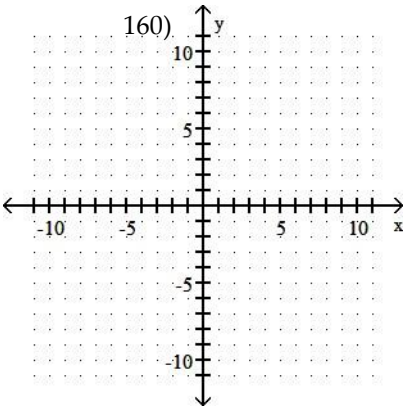


D)

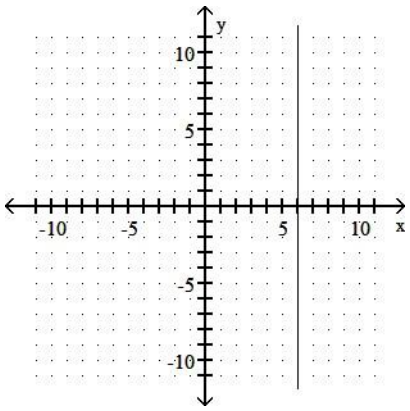


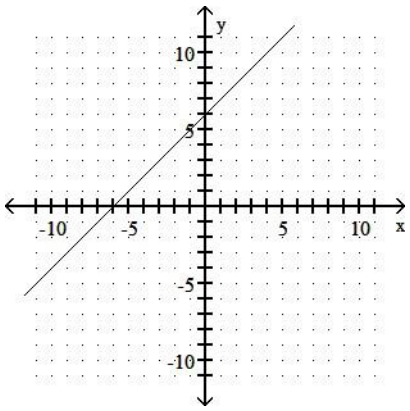
Answer: B

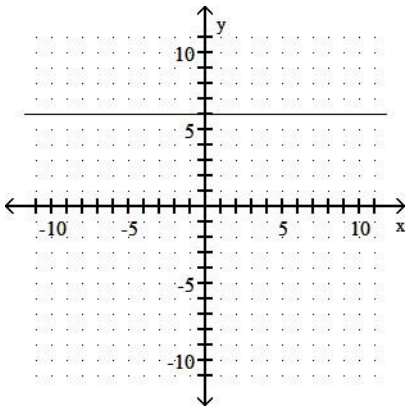
160) -7y = -42

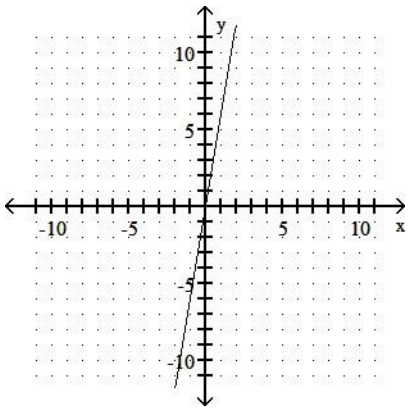
160) 

____
_

A) 

B) 

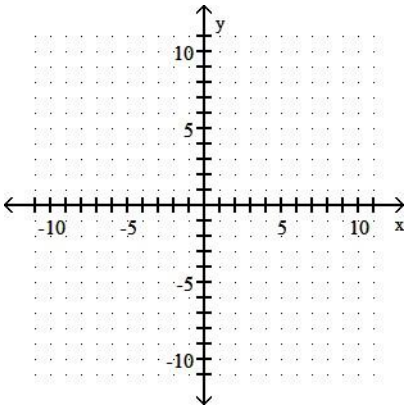
C) 

D) 

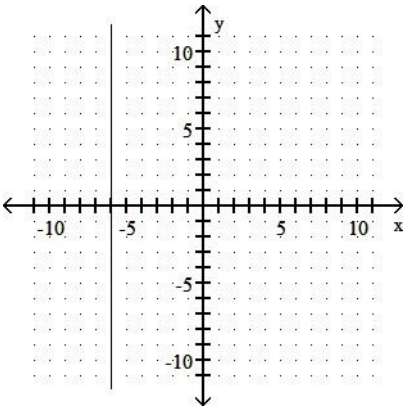
Answer: C

161) 8x + 3 = -45

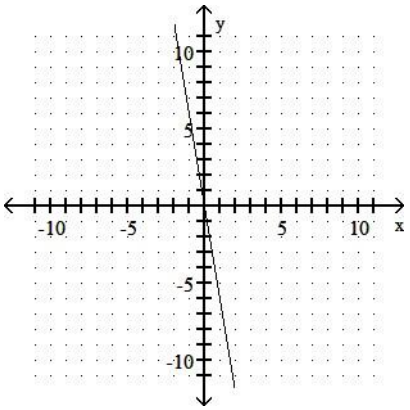
161) _____



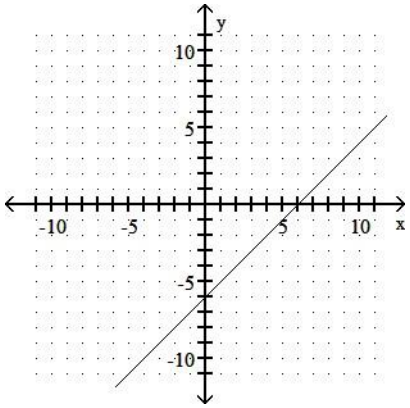
A)



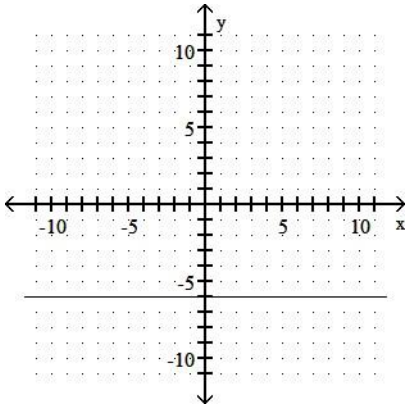
B)



C)



D)



Answer: A

Determine the slope and the y-intercept of the graph of the equation.

162) y - 6 = 0 162) _____

A) m = 6; (0, 0)
B) m = 0; no y-intercept
C) m = 0; (0, 6)
D) m = 1; (0, 6)

Answer: C

163) x + y + 10 = 0 163) _____

A) m = -1; (0, -10)
B) m = 0; (0, -10)
C) m = -1; (0, 10)
D) m = 1; (0, -10)

Answer: A

164) 6x + y + 8 = 0 164) _____

A) m = -6; (0, -8)
B) m = 6; (0, -8)
C) m = $-\frac{1}{6}$; $\left(0, -\frac{4}{3}\right)$
D) m = $-\frac{3}{4}$; $\left(0, -\frac{1}{8}\right)$

Answer: A

165) 4x - 11y - 44 = 0 165) _____

A) m = $\frac{4}{11}$; (0, -4)
B) m = $\frac{11}{4}$; (0, 11)
C) m = $-\frac{4}{11}$; (0, 4)
D) m = 4; (0, 44)

Answer: A

166) x + 10y -1 = 0 166) _____

A) m =

- $\frac{1}{10}$; $\left(0, \frac{1}{10}\right)$

B) m = 1; (0, 1)

C) m = -10; (0, 10)

D) m = $\frac{1}{10}$; $\left(0, \frac{1}{10}\right)$

Answer: A

167) -x + 4y - 8 = 0 167) _____

A) m = 4; (0, -8)

B) m = -1; (0, 8)

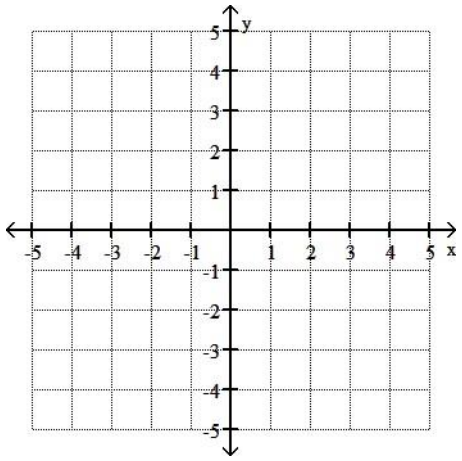
C) m = - $\frac{1}{4}$; (0, 2)

D) m = $\frac{1}{4}$; (0, 2)

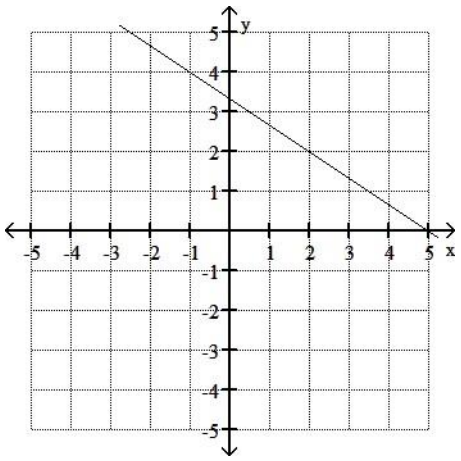
Answer: D

Graph the equation.

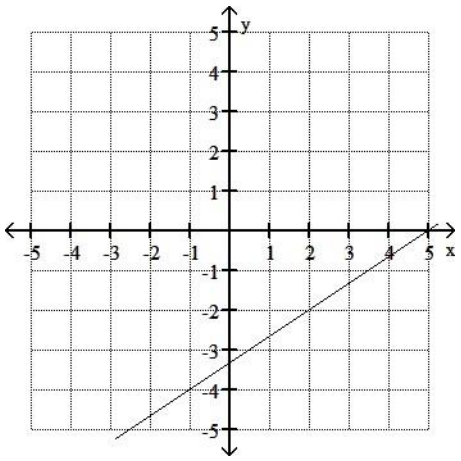
168) 2x + 3y - 10 = 0 168) _____



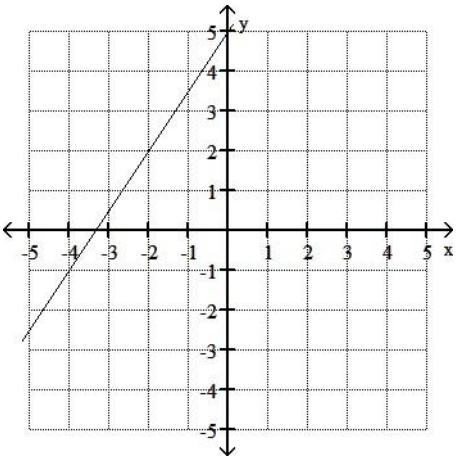
A)



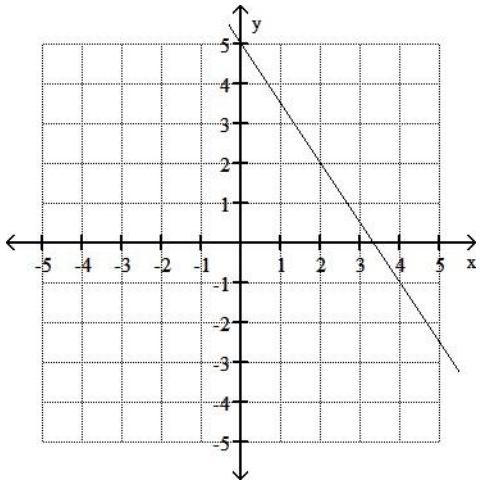
B)



C)

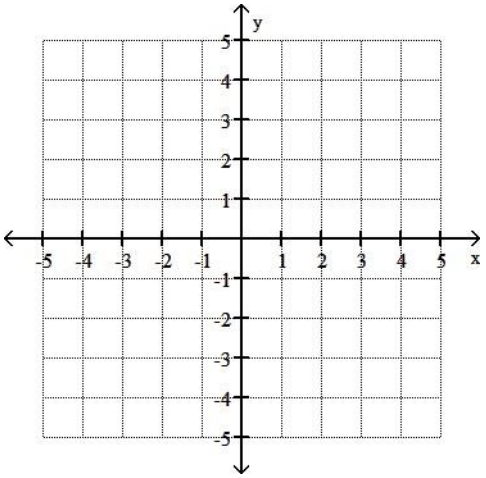


D)



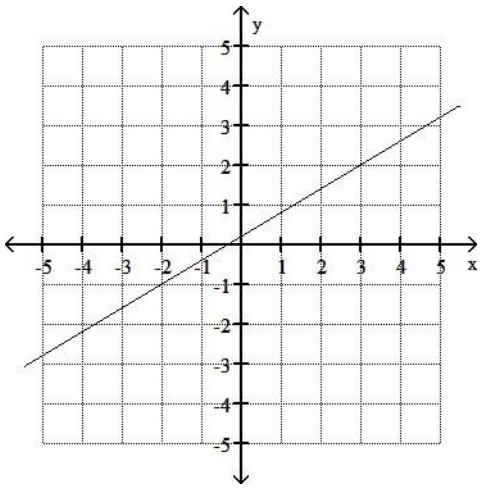
Answer: A

169) $3x - 5y + 1 = 0$ 169) _____

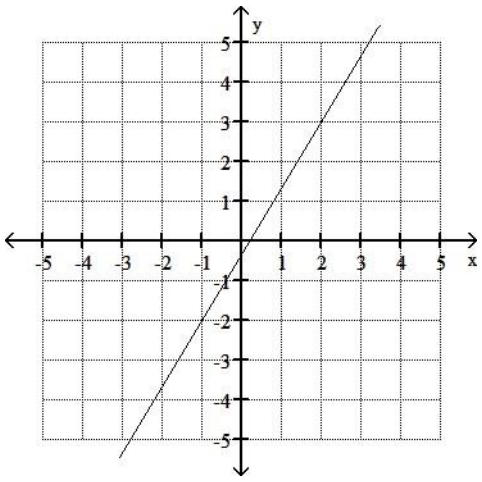


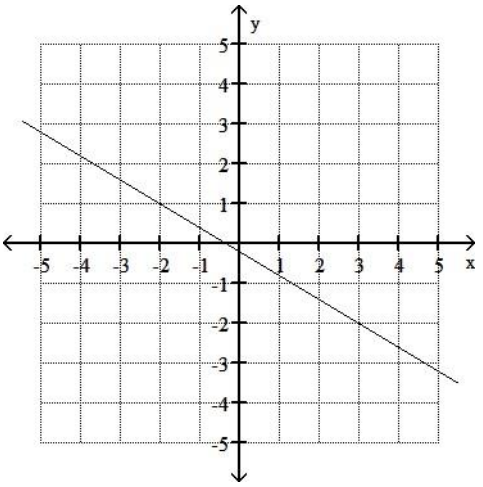
A)

B)

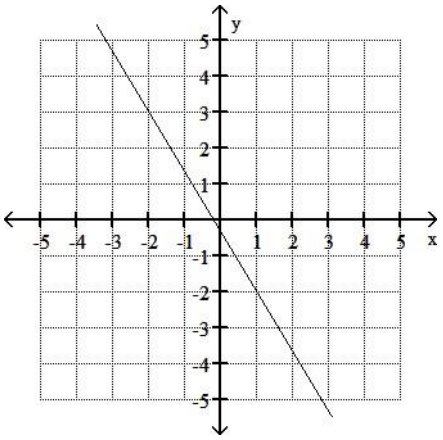


C)





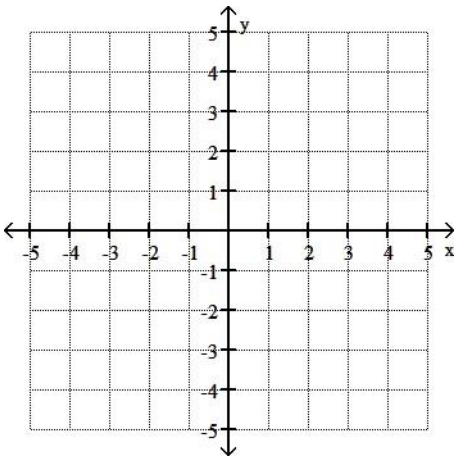
D)



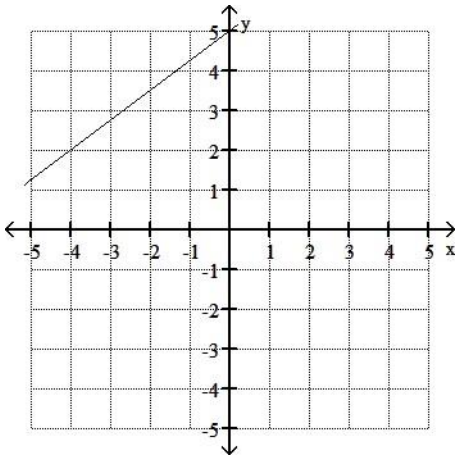
Answer: A

170) 3x -4y + 20 = 0 170) _____

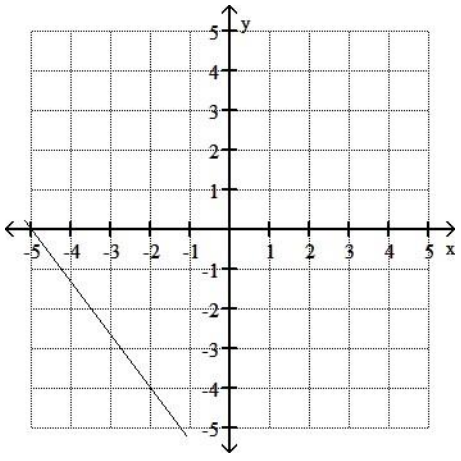
A)

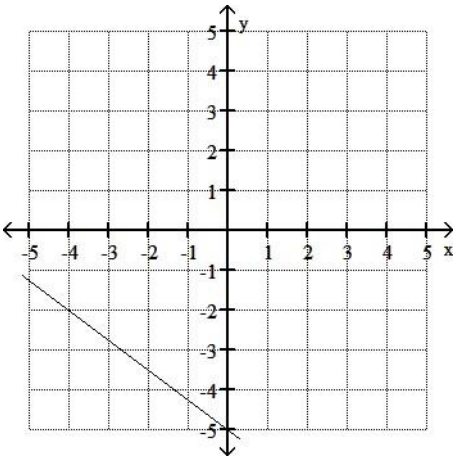


B)

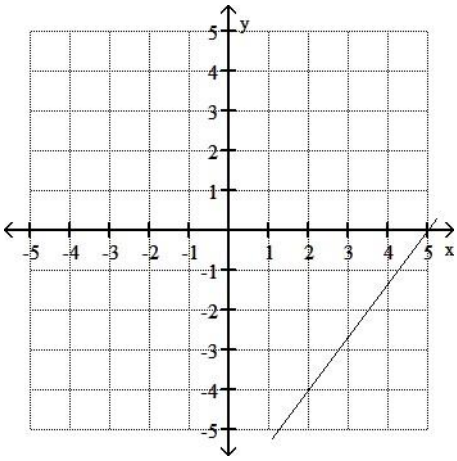


C)



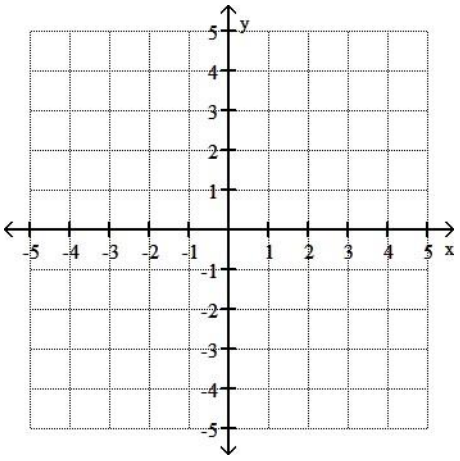


D)

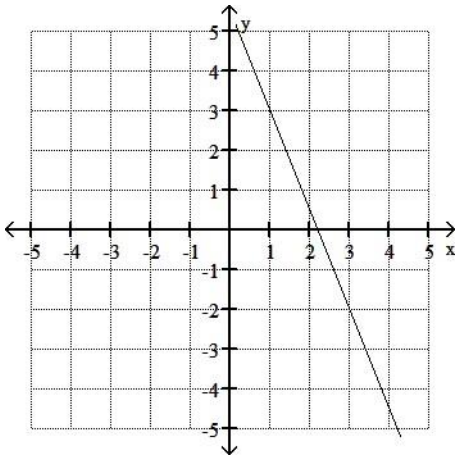


Answer: B

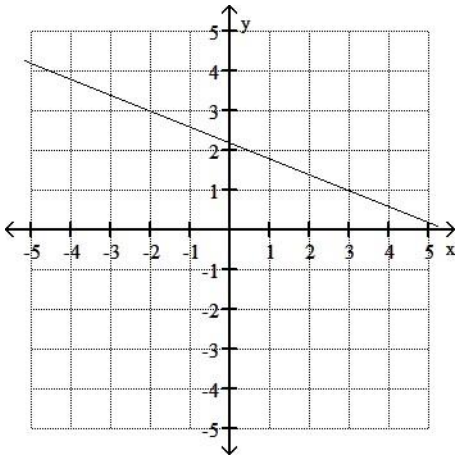
171) -5y + 2x + 11 = 0 171) _____



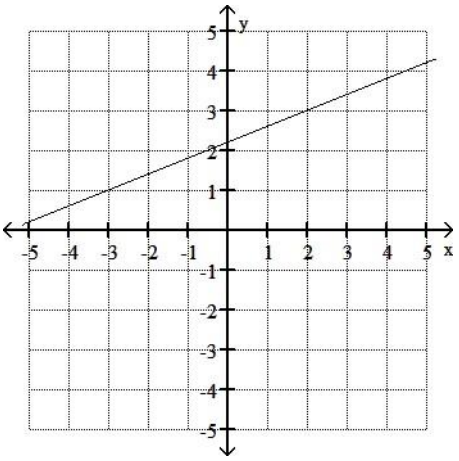
A)



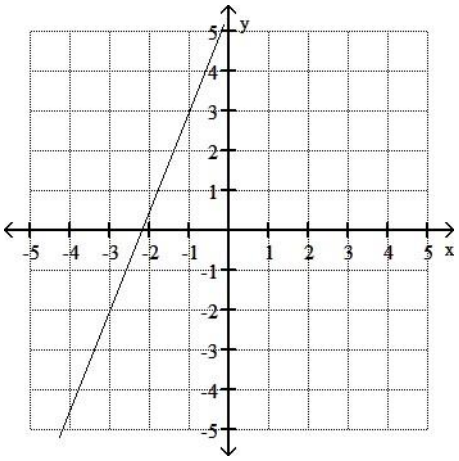
B)



C)



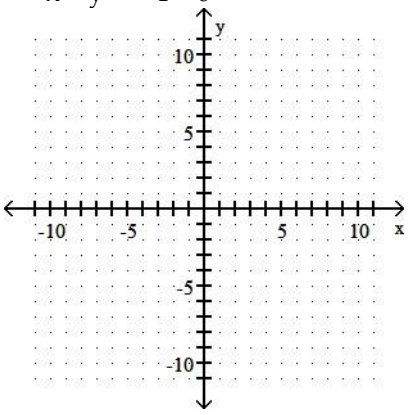
D)



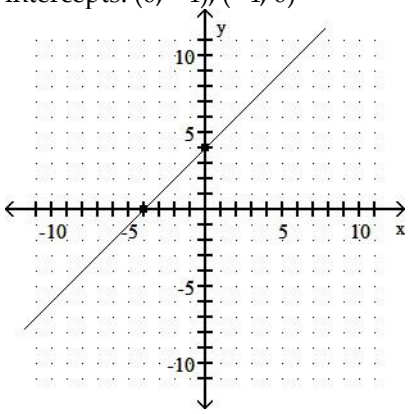
Answer: C

Graph the linear function by plotting the x- and y-intercepts.

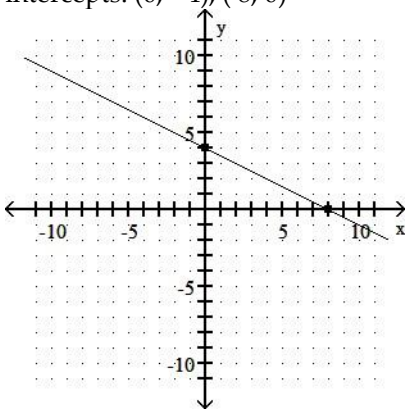
172) $-\frac{1}{2}x + y - 4 = 0$ 172) _____



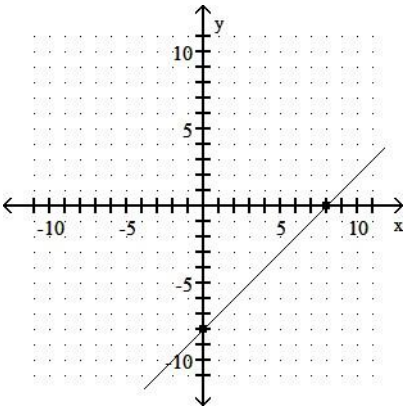
A) intercepts: (0, 4), (-4, 0)



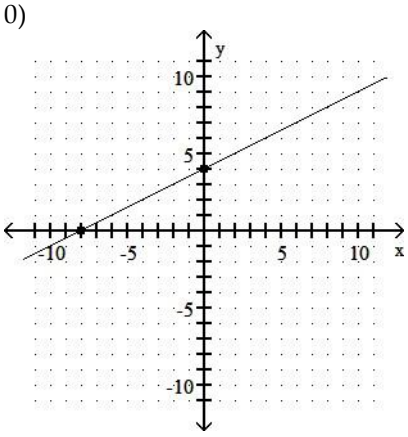
B) intercepts: (0, 4), (8, 0)



C) intercepts: (0, -8), (8, 0)

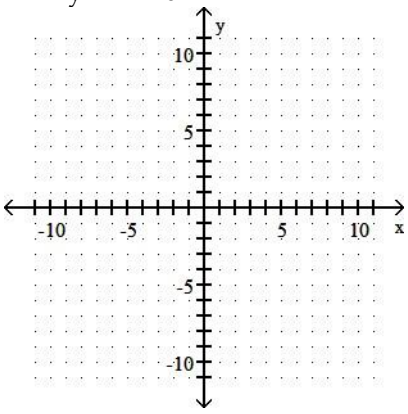


D) intercepts: (0, 4), (-8, 0)



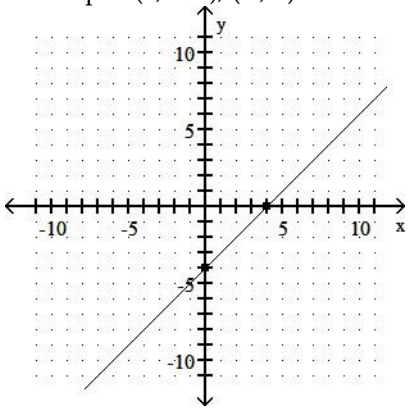
Answer: D

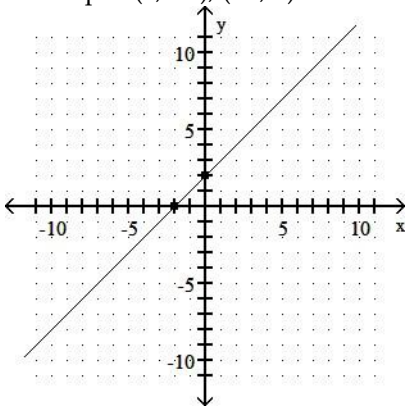
173) $\frac{1}{2}x + y - 2 = 0$ 173) _____



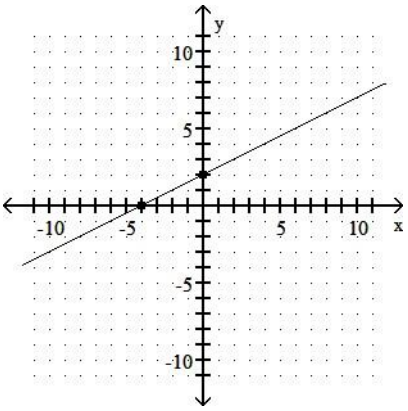
A) intercepts: (0, 2), (-2, 0)

B) intercepts: (0, -4), (4, 0)

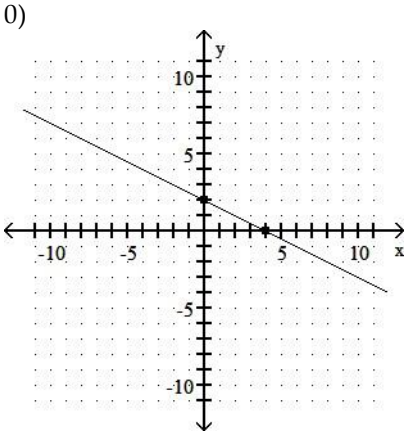




C) intercepts: (0, 2), (-4, 0)

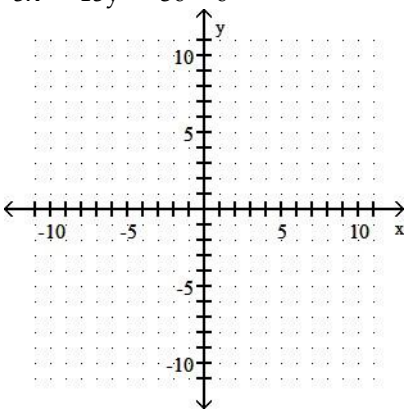


D) intercepts: (0, 2), (4, 0)



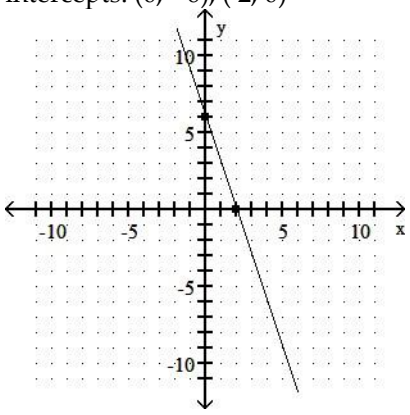
Answer: D

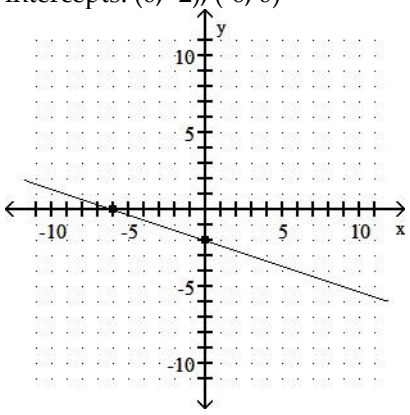
174) -5x - 15y - 30 = 0 174) _____



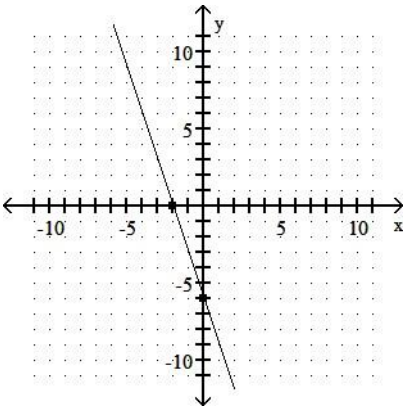
A) intercepts: (0, -2), (-6, 0)

B) intercepts: (0, 6), (2, 0)

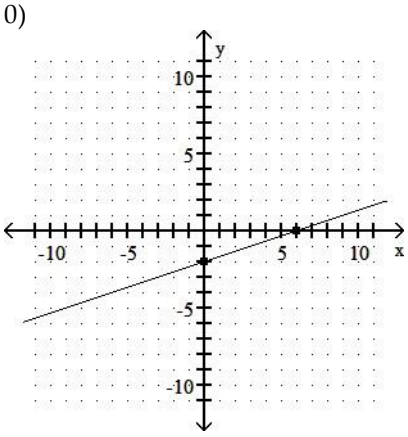




C) intercepts: (0, -6), (-2, 0)

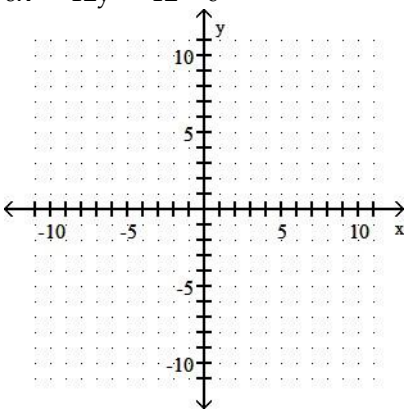


D) intercepts: (0, -2), (6, 0)

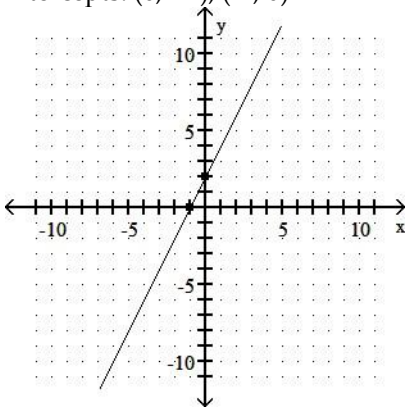


Answer: A

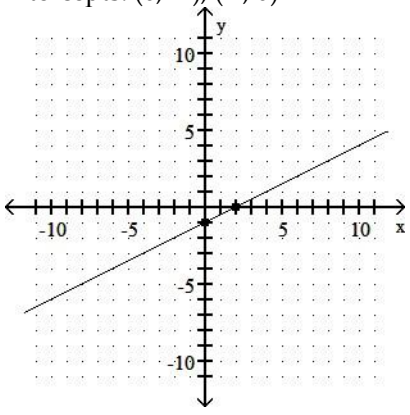
175) 6x - 12y - 12 = 0 175) _____



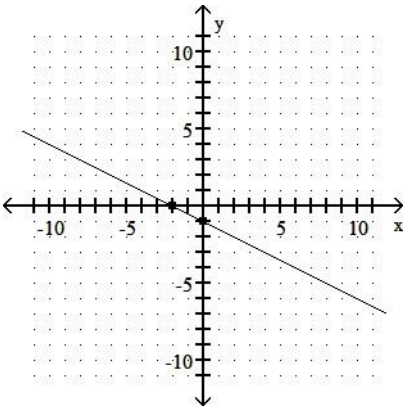
A) intercepts: (0, 2), (-1, 0)



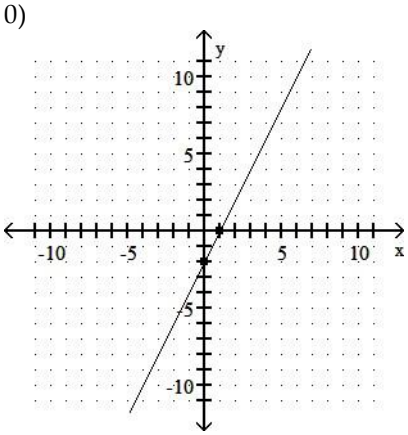
B) intercepts: (0, -1), (2, 0)



C) intercepts: (0, -1), (-2, 0)

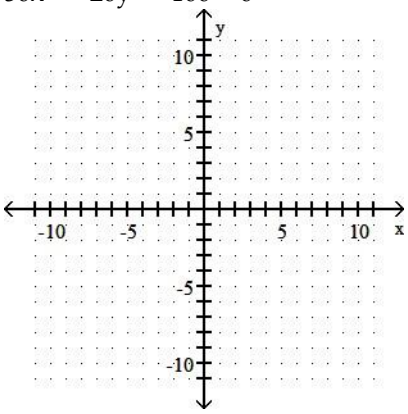


D) intercepts: (0, -2), (1, 0)

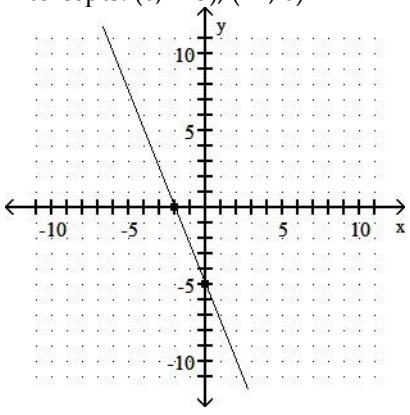


Answer: B

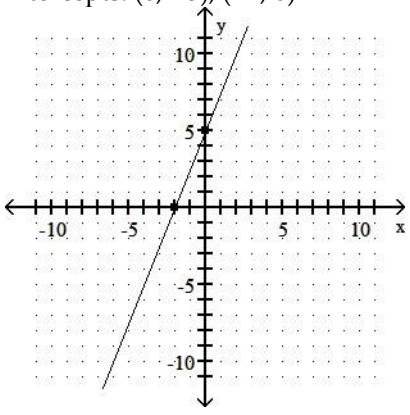
176) $50x + 20y - 100 = 0$ 176) _____



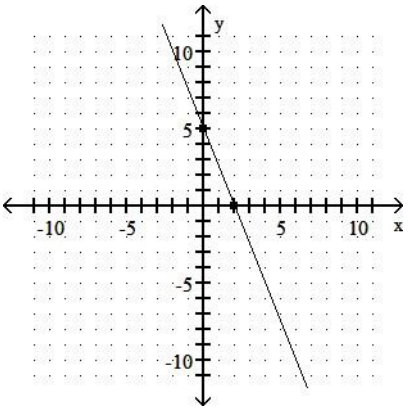
A) intercepts: (0, -5), (-2, 0)



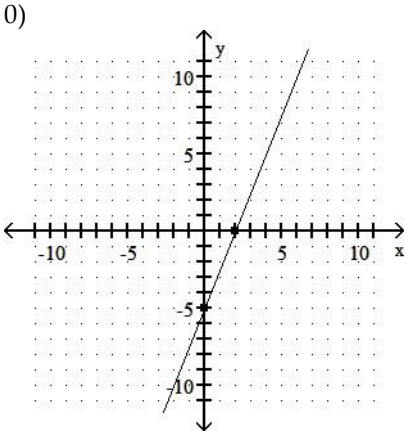
B) intercepts: (0, 5), (-2, 0)



C) intercepts: (0, 5), (2, 0)



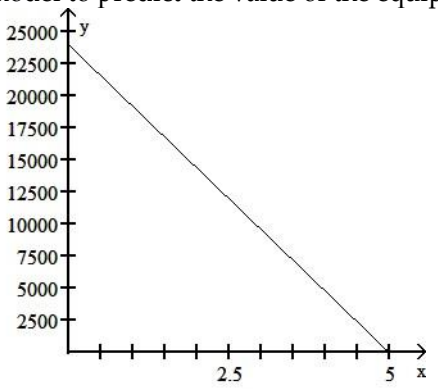
D) intercepts: (0, -5), (2, 0)



Answer: C

Solve.

177) A school has just purchased new computer equipment for $24,000.00. The graph shows the depreciation of the equipment over 5 years. The point (0, 24,000) represents the purchase price and the point (5, 0) represents when the equipment will be replaced. Write a linear equation in slope-intercept form that models the value of the equipment, y, x years after purchase. Use the model to predict the value of the equipment after 1 years? 177) _____



A) y = - 4800x + 24,000;
value after 1 years is $ 19,200.00;

B) y = - 24,000x + 24,000;
value after 1 years is $ 0.00

C) y = 4800x - 24,000;
value after 1 years is $ 19,200.00

D) y = 24,000x + 5;
value after 1 years is $ 19,200.00

Answer: A

178) The average value of a certain type of automobile was $13,500 in 1993 and depreciated to $7320 in 1996. Let y be the average value of the automobile in the year x, where x = 0 represents 1993. Write a linear equation that models the value of the automobile in terms of the year x. 178) _____

A) y

$= -\frac{1}{2060}x - 7320$

B) $y = -2060x + 11400$

C) $y = -2060x + 13{,}500$

D) $y = -2060x + 7320$

Answer: C

179) An investment is worth $ 3191 in 1994. By 1998 it has grown to $4319. Let y be the value of the investment in the year x, where x = 0 represents 1994. Write a linear equation that models the value of the investment in the year x. 179) _____

A) $y = 282x + 3191$

B) $y = -282x + 3191$

C) $y = \frac{1}{282}x + 3191$

D) $y = -282x + 5447$

Answer: A

180) A faucet is used to add water to a large bottle that already contained some water. After it has been filling for 4 seconds, the gauge on the bottle indicates that it contains 11 ounces of water. After it has been filling for 11 seconds, the gauge indicates the bottle contains 25 ounces of water. Let y be the amount of water in the bottle x seconds after the faucet was turned on. Write a linear equation that models the amount of water in the bottle in terms of x. 180) _____

A) $y = 2x + 14$

B) $y = \frac{1}{2}x + 9$

C) $y = -2x + 19$

D) $y = 2x + 3$

Answer: D

181) When making a telephone call using a calling card, a call lasting 6 minutes cost $1.65. A call lasting 14 minutes cost $3.25. Let y be the cost of making a call lasting x minutes using a calling card. Write a linear equation that models the cost of a making a call lasting x minutes. 181) _____

A) $y = 5x - \frac{567}{20}$

B) $y = 0.2x - 10.75$

C) $y = -0.2x + 2.85$

D) $y = 0.2x + 0.45$

Answer: D

182) A vendor has learned that, by pricing carmel apples at $1.25, sales will reach 91 carmel apples per day. Raising the price to $1.75 will cause the sales to fall to 67 carmel apples per day. Let y be the number of carmel apples the vendor sells at x dollars each. Write a linear equation that models the number of carmel apples sold per day when the price is x dollars each. 182) _____

A) $y = -48x + 151$

B) $y = 48x + 31$

C) $y = -48x - 151$

D) $y = -\frac{1}{48}x + \frac{17467}{192}$

Answer: A

183) The average value of a certain type of automobile was $13,860 in 1992 and depreciated to $6420 in 1995. Let y be the average value of the automobile in the year x, where x = 0 represents 1992. Write a linear equation that models the value of the automobile in terms of the year x. 183) _____

A) $y = -\frac{1}{2480}x - 6420$

B) $y = -2480x + 6420$

C) y = -2480x - 1020 D) y = -2480x + 13,860

Answer: D

184) An investment is worth $ 2078 in 1993. By 1998 it has grown to $3438. Let y be the value of the investment in the year x, where x = 0 represents 1993. Write a linear equation that models the value of the investment in the year x. 184) _____

A) y = -272x + 4798 B) y = -272x + 2078

C) y = 272x + 2078 D) $y = \frac{1}{272}x + 2078$

Answer: C

185) When making a telephone call using a calling card, a call lasting 5 minutes cost $2.50. A call lasting 13 minutes cost $5.70. Let y be the cost of making a call lasting x minutes using a calling card. Write a linear equation that models the cost of making a call lasting x minutes. 185) _____

A) $y = \frac{5}{2}x - 10$ B) y = 0.4x - 7.3 C) y = 0.4x + 0.5 D) y = -0.4x + 4.5

Answer: C

186) A vendor has learned that, by pricing pretzels at $ 1.00, sales will reach 131 pretzels per day. Raising the price to $2.00 will cause the sales to fall to 79 pretzels per day. Let y be the number of pretzels the vendor sells at x dollars each. Write a linear equation that models the number of pretzels sold per day when the price is x dollars each. 186) _____

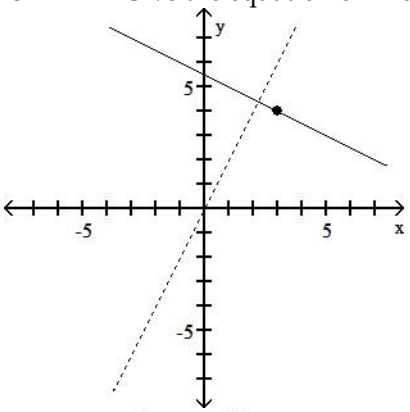
A) y = -52x + 183 B) $y = -\frac{1}{52}x + \frac{6811}{52}$

C) y = -52x - 183 D) y = 52x + 79

Answer: A

Find an equation for the line with the given properties.

187) The solid line L contains the point (3, 4) and is perpendicular to the dotted line whose equation is $y = 2x$. Give the equation of line L in slope-intercept form. 187) _____

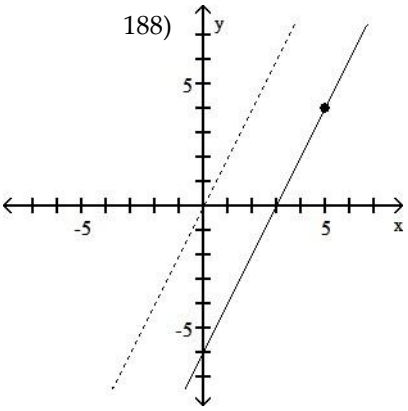


A) $y = -\frac{1}{2}x + \frac{11}{2}$ B) $y - 4 = -\frac{1}{2}(x - 3)$

C) y - 4 = 2(x - 3) D) $y = \frac{1}{2}x + \frac{11}{2}$

Answer: A

188) The solid line L contains the point (5, 4) and is parallel to the dotted line whose equation is $y = 2x$. Give the equation for the line L in slope-intercept form.

188) 

____
_

A) y = 2x - 6 B) y - 4 = 2(x - 5) C) y = 2x + b D) y = 2x - 1

Answer: A

Use the given conditions to write an equation for the line in the indicated form.

189) Passing through (4, 2) and parallel to the line whose equation is $y = 2x - 6$; point-slope form 189) _____

A) y - 2 = x - 4 B) y - 2 = 2(x - 4) C) y = 2x D) y - 4 = 2(x - 2)

Answer: B

190) Passing through (4, 3) and perpendicular to the line whose equation is y = 5x + 7; point-slope form 190) _____

A) $y - 3 = -\frac{1}{5}(x - 4)$ B) y = - 5x - 19

C) $y - 3 = \frac{1}{5}(x + 4)$ D) $y - 4 = \frac{1}{5}(x - 3)$

Answer: A

191) Passing through (3, -5) and parallel to the line whose equation is $y = -2x + 3$; point-slope form 191) _____

A) y + 5 = -2(x - 3) B) y + 5 = x - 3 C) y - 3 = -2(x + 5) D) y = 2x

Answer: A

192) Passing through (2, -5) and parallel to the line whose equation is y = -4x + 7; slope-intercept form 192) _____

A) $y = -\frac{1}{4}x - \frac{3}{4}$ B) y = 4x - 3 C) y = - 4x + 3 D) y = - 4x - 3

Answer: C

193) Passing through (5, 2) and perpendicular to the line whose equation is $y = \frac{1}{4}x + 9$; slope-intercept form 193) _____

A) $y = -\frac{1}{4}x - \frac{11}{2}$ B) y = 4x - 22 C) y = - 4x + 22 D) y = - 4x - 22

Answer: C

194) Passing through (5, 2) and parallel to the line whose equation is $y = -\frac{1}{2}x + 2$; slope-intercept form 194) _____

A) $y = -\frac{1}{2}x - \frac{9}{2}$ B) $y = -\frac{1}{2}x + \frac{9}{2}$ C) y = - 2x - 9 D) $y = \frac{1}{2}x - \frac{9}{2}$

Answer: B

195) Passing through (5, 4) and parallel to the line whose equation is $3x + y - 7 = 0$; slope-intercept form 195) _____

A) y = - 3x + 19 B) y = - 3x - 19 C) $y = -\frac{1}{3}x - \frac{19}{3}$ D) y = 3x - 19

Answer: A

196) Passing through (2, 4) and perpendicular to the line whose equation is $-9x + y - 3 = 0$; slope-intercept form 196) _____

A) $y = -\frac{1}{9}x + \frac{38}{9}$ B) $y = -\frac{1}{9}x - \frac{38}{9}$ C) $y = \frac{1}{9}x - \frac{38}{9}$ D) y = - 9x - 38

Answer: A

Find the slope then describe what it means in terms of the rate of change of the dependent variable per unit change in the independent variable.

197) The linear function f(x) = 4.3x + 38 represents the percentage of people, f(x), who graduated from college x years after 1998. 197) _____

A) m = 4.3; the percentage of people graduating from college has increased at a rate of 4.3% per year after 1998.

B) m = 4.3; the percentage of people graduating from college has decreased at a rate of 4.3% per year after 1998.

C) m = 38; the percentage of people graduating from college has increased at a rate of 38% per year after 1998.

D) m = -4.3; the percentage of people graduating from college has decreased at a rate of 4.3% per year after 1998.

Answer: A

198) The linear function f(x) = -8.1x + 26 models the percentage of people, f(x), who eat at fast food restaurants each week x years after 1998. 198) _____

A) m = 8.1; the percentage of people eating at fast food restaurants each week has increased at a rate of 8.1% per year after 1998.

B) m = 8.1; the percentage of people eating at fast food restaurants each week has increased at a rate of -8.1% per year after 1998.

C) m = -8.1; the percentage of people eating at fast food restaurants each week has decreased at a rate of -8.1% per year after 1998.

D) m = 26; the percentage of people eating at fast food restaurants each week has increased

at a rate of -8.1% per year after 1998.

Answer: C

Find the average rate of change of the function from x_1 to x_2.

199) $f(x) = \sqrt{2x}$ from $x_1 = 2$ to $x_2 = 8$ 199) _____

A) 2 B) $\frac{1}{3}$ C) $-\frac{3}{10}$ D) 7

Answer: B

200) $f(x) = -3x^2 - x$ from $x_1 = 5$ to $x_2 = 6$ 200) _____

A) $\frac{1}{2}$ B) -2 C) $-\frac{1}{6}$ D) -34

Answer: D

201) $f(x) = 5x + 7$ from $x_1 = -1$ to $x_2 = 0$ 201) _____

A) $\frac{1}{2}$ B) 5 C) $-\frac{1}{6}$ D) -28

Answer: B

Solve the problem.

202) From April through December 2000, the stock price of QRS Company had a roller coaster ride. The chart below indicates the price of the stock at the beginning of each month during that period. Find the monthly average rate of change in price between June and September. 202) _____

Month	Price
April (x = 1)	114
May	107
June	89
July	100
August	96
September	111
October	92
November	86
December	66

A) \$7.33 per month B) -\$7.33 per month

C) -\$11.00 per month D) \$11.00 per month

Answer: A

203) Along with incomes, people's charitable contributions have steadily increased over the past few years. The table below shows the average deduction for charitable contributions reported on individual income tax returns for the period 1993 to 1998. Find the average annual increase between 1995 and 1997. 203) _____

Year	Charitable Contribution
1993	\$1860
1994	\$2370
1995	\$2450
1996	\$2780
1997	\$3010
1998	\$3150

A) \$320 per year B) \$350 per year C) \$280 per year D) \$560 per year

Answer: C

204) A deep sea diving bell is being lowered at a constant rate. After 8 minutes, the bell is at a depth of 500 ft. After 50 minutes the bell is at a depth of 1500 ft. What is the average rate of lowering per minute? Round to the nearest hundredth is needed. 204) _____

A) 23.8 ft per minute
B) 0.04 ft per minute
C) 30.0 ft per minute
D) 20.0 ft per minute

Answer: A

1) C
2) B
3) B
4) B
5) B
6) D
7) A
8) A
9) B
10) B
11) A
12) B
13) A
14) B
15) B
16) A
17) B
18) A
19) A
20) A
21) B
22) B
23) B
24) B
25) A
26) A
27) A
28) A
29) A
30) A
31) C
32) B
33) D
34) B
35) D
36) A
37) D
38) B
39) B
40) C
41) A
42) D
43) C
44) D
45) B
46) A
47) D
48) C
49) C
50) A
51) C

52) C
53) B
54) B
55) A
56) A
57) B
58) B
59) B
60) A
61) A
62) A
63) A
64) A
65) B
66) B
67) C
68) D
69) A
70) A
71) B
72) C
73) A
74) B
75) A
76) B
77) C
78) D
79) D
80) B
81) A
82) A
83) D
84) C
85) D
86) D
87) A
88) C
89) B
90) B
91) B
92) D
93) B
94) A
95) C
96) A
97) C
98) B
99) C
100) C
101) A
102) A
103) C

104) C
105) C
106) C
107) B
108) A
109) B
110) A
111) A
112) C
113) B
114) B
115) A
116) B
117) D
118) D
119) A
120) $25.52
$42.69
$$C(x) = \begin{cases} 8.8 + 0.6686x & \text{if } 0 \le x \le 25 \\ 25.515 + 0.133219(x - 25) & \text{if } x > 25 \end{cases}$$
121) $39.70
$49.69
$$C(x) = \begin{cases} 4.93 + 0.11589x & \text{if } 0 \le x \le 300 \\ 39.697 + 0.13321(x - 300) & \text{if } x > 300 \end{cases}$$
122) $18.00
$24.25
$65.50
123) 6.0°C
124) $27.50
$32.50;
$$C(x) = \begin{cases} 20 & \text{if } 0 \le x \le 100 \\ 20 + 0.075(x - 100) & \text{if } 100 < x \le 200 \\ 27.50 + 0.1(x - 200) & \text{if } x > 200 \end{cases}$$
125) B
126) A
127) A
128) B
129) A
130) D
131) B
132) D
133) C
134) C
135) C
136) B
137) C
138) C
139) A
140) C
141) D
142) B
143) B

144) D
145) A
146) D
147) A
148) C
149) C
150) B
151) A
152) D
153) C
154) D
155) A
156) D
157) D
158) B
159) B
160) C
161) A
162) C
163) A
164) A
165) A
166) A
167) D
168) A
169) A
170) B
171) C
172) D
173) D
174) A
175) B
176) C
177) A
178) C
179) A
180) D
181) D
182) A
183) D
184) C
185) C
186) A
187) A
188) A
189) B
190) A
191) A
192) C
193) C
194) B
195) A

196) A
197) A
198) C
199) B
200) D
201) B
202) A
203) C
204) A