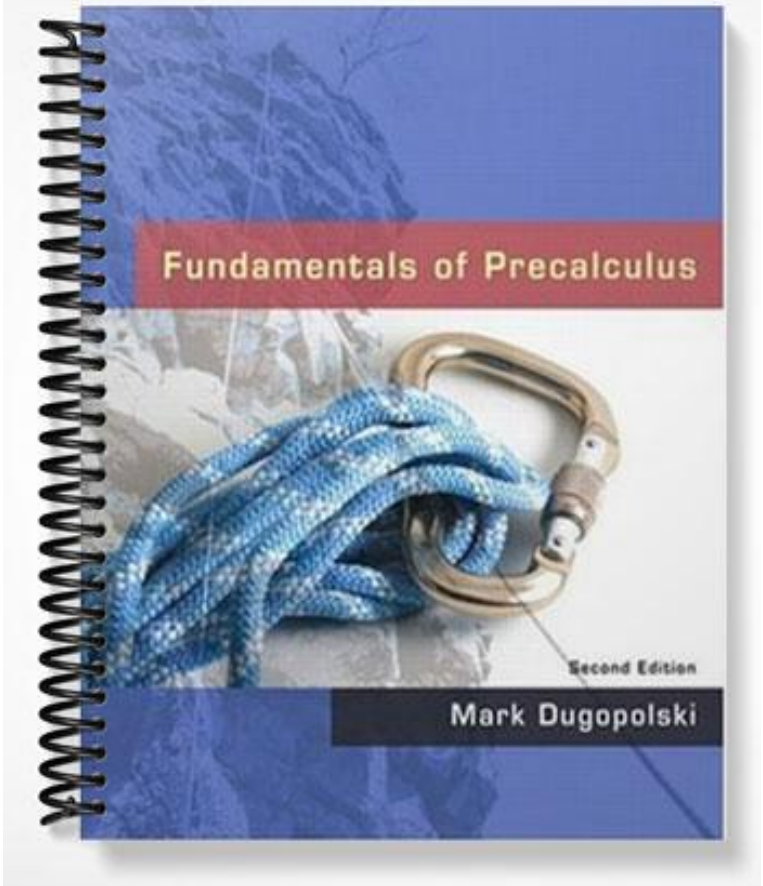
TEST BANK


Fundamentals of Precalculus
Second Edition
Mark Dugopolski

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.
Determine which numbers in the given set are members of the specified subset.

1) $\{20, \sqrt{5}, -2, 0, 3.14, \pi\}$ Integers 1) _____
A) $\{-2\}$ B) $\{20, -2, 0, 3.14\}$ C) $\{20, 0\}$ D) $\{20, -2, 0\}$

2) $\{9, \sqrt{5}, -9, 0, \pi, 5.8383 \ldots\}$ Natural numbers 2) _____
A) $\{9, -9, 0\}$ B) $\{\pi\}$ C) $\{9, 0\}$ D) $\{9\}$

3) $\{13, \sqrt{6}, -18, 0, \pi, 5.8383 \ldots\}$ Whole numbers 3) _____
A) $\{13, 0\}$ B) $\{\pi\}$ C) $\{13, -18, 0\}$ D) $\{13\}$

4) $\{18, \sqrt{8}, -9, 0, 2.7183, 5.8383 \ldots\}$ Real numbers 4) _____
A) $\{18, -9, 0\}$ B) $\{18, \sqrt{8}, -9, 2.7183, 5.8383 \ldots\}$
C) $\{18, \sqrt{8}, -9, 0, 2.7183, 5.8383 \ldots\}$ D) $\{18, -9, 0, 2.7183\}$

5) $\{\pi, 20, \sqrt{6}, -13, 0.09, 5.0\ 2000\ 20000\ 20 \ldots, 5.1414 \ldots\}$ Rational numbers 5) _____
A) $\{0.09, 5.0\ 2000\ 20000\ 20 \ldots, 5.1414 \ldots\}$ B) $\{20, -13, 0.09, 5.1414 \ldots\}$
C) $\{\sqrt{6}\}$ D) $\{\pi, \sqrt{6}\}$

6) $\{\pi, 8, \sqrt{6}, -23, 0.63, 5.0\ 800\ 8000\ 8 \ldots, 5.1414 \ldots\}$ Irrational numbers 6) _____
A) $\{\pi, \sqrt{6}\}$ B) $\{\pi, \sqrt{6}, 5.0\ 800\ 8000\ 8 \ldots\}$
C) $\{\sqrt{6}\}$ D) $\{8, -23, 0.63, 5.1414 \ldots\}$

Complete the statement using the indicated property.

7) -5 + (___) = 0, additive inverse 7) _____
A) 5 B) 0 C) $\frac{1}{5}$ D) -5

8) 5 + (___) = 0, additive inverse 8) _____
A) 5 B) 0 C) $\frac{1}{5}$ D) -5

9) 0.25(___) = 1, multiplicative inverse 9) _____
A) 25 B) 16 C) -4 D) 4

10) $\frac{1}{9}$ (___) = 1, multiplicative inverse 10) _____
A) 9 B) -1 C) 81 D) 1

11) 7 + x = _____ , commutative 11) _____
A) 7 - x B) x + 7 C) -x - 7 D) x - 7

12) xy = _____ , commutative 12) _____
A) $\frac{y}{x}$ B) $\frac{1}{xy}$ C) yx D) $\frac{x}{y}$

13) -5(x + 9) = _____ , distributive 13) _____

A) $5x - 45$ B) $-5x + 9$ C) $-5x - 45$ D) $x - 45$

14) $6x - 42$ = _____ , distributive 14) _____
A) $6x + 42$ B) $6(x - 42)$ C) $x - 7$ D) $6(x - 7)$

15) $(3x + 2y) + 3z$ = _____ , associative 15) _____
A) $3x + (2y + 3z)$ B) $(3x + 2y + 3z)$ C) $(2y + 3x) + 3z$ D) $(2y + 3x + 3z)$

16) $2(5y)$ = _____ , associative 16) _____
A) $(2 \cdot 5)\, y$ B) $5(y \cdot 2)$ C) $(5y) \cdot 2$ D) $2(y \cdot 5)$

Use the properties of opposites to complete the equation.

17) $-(-1)$ = _____ 17) _____
A) 1 B) 0
C) -1 D) None of the above

18) $-1(-5.5)$ = _____ 18) _____
A) 0 B) 5.5
C) -5.5 D) None of the above

19) $-(2 - x^2)$ = _____ 19) _____
A) $-2 - x^2$ B) $x^2 - 2$
C) $x^2 + 2$ D) None of the above

20) $-1(2 - x^2)$ = _____ 20) _____
A) $x^2 + 2$ B) $-2 - x^2$
C) $x^2 - 2$ D) None of the above

Use the symbolic definition of absolute value to simplify the expression.

21) $|1.5|$ 21) _____
A) 1.5 B) 0
C) -1.5 D) None of the above

22) $|-4.5|$ 22) _____
A) 0 B) 4.5
C) -4.5 D) None of the above

23) $\left|-\frac{2}{7}\right|$ 23) _____
A) $-\frac{2}{7}$ B) 2
C) $\frac{2}{7}$ D) None of the above

24) $\left|\frac{0}{4}\right|$ 24) _____
A) -4 B) 0
C) 4 D) None of the above

Solve the absolute value equation.

25) $|x| = 6$ 25) _____

A) { 6} B) { -6} C) { 6, -6} D) { 36}

26) $|x| = 8.6$ 26) _____

A) { -8.6} B) { 7396} C) { 8.6} D) {8.6, -8.6}

27) $|b + 5| = 9$ 27) _____

A) { 4} B) { -4, 14} C) { 4, -14} D) ∅

28) $|4m + 2| = 8$ 28) _____

A) ∅ B) $\left\{-\frac{3}{2}, \frac{5}{2}\right\}$ C) $\{3, -5\}$ D) $\left\{\frac{3}{2}, -\frac{5}{2}\right\}$

29) $|t - 7| = 0$ 29) _____

A) { 7} B) (-∞, -7] ∪ [7, ∞) C) { -7} D) ∅

30) $|5x| = 0$ 30) _____

A) {0, 5} B) { -5, 5} C) {0} D) { -5, 0}

31) $|6x| = 4$ 31) _____

A) $\left\{-\frac{2}{3}\right\}$ B) $\left\{-\frac{3}{2}, \frac{3}{2}\right\}$ C) $\left\{\frac{2}{3}\right\}$ D) $\left\{-\frac{2}{3}, \frac{2}{3}\right\}$

32) $|x + 7| - 4 = 11$ 32) _____

A) { 14, 8} B) { 0, 8} C) { -8, 8} D) { -22, 8}

33) $\frac{1}{2}|x - 14| = 16$ 33) _____

A) { 46, -18} B) { 18, -46} C) { -18} D) { 46}

34) $2|x + 7| - 7 = 1$ 34) _____

A) $\{-3, -11\}$ B) $\{-3\}$ C) $\{-3, 10\}$ D) $\{-11\}$

Write an inequality whose solution set is the interval.

35) (-4, -3) 35) _____

A) -4 > x > -3 B) -4 ≤ x ≤ -3 C) -4 < x > -3 D) -4 < x < -3

36) (-∞, 10] 36) _____

A) x > 10 B) x < 10 C) x ≤ 10 D) x ≥ 10

37) [-9, 8) 37) _____

A) -9 ≤ x ≤ 8 B) -9 < x > 8 C) -9 ≤ x < 8 D) -9 < x ≤ 8

38) (3, ∞) 38) _____

A) x ≥ 3 B) x > 3 C) x ≤ 3 D) x < 3

39) [-11, ∞) 39) _____

A) x > -11 B) x ≤ -11 C) x ≥ -11 D) x < -11

40) (-∞, 7) 40) _____

A) $x < 7$ B) $x \geq 7$ C) $x \leq 7$ D) $x > 7$

Write the solution set in interval notation.

41) $x \geq -5$ 41) _____

A) [-5, ∞) B) (-∞, -5) C) (-∞, -5] D) (-5, ∞)

42) $x < -33$ 42) _____

A) (-33, ∞) B) [-33, ∞) C) (-∞, -33) D) (-∞, -33]

43) $x > \frac{\pi}{2}$ 43) _____

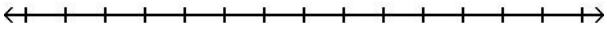
A) [π/2, ∞) B) (-∞, π/2) C) (-∞, π/2] D) (π/2, ∞)

44) $x \leq \sqrt{5}$ 44) _____

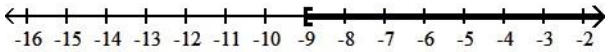
A) $(-\infty, \sqrt{5})$ B) $[\sqrt{5}, \infty)$ C) $(-\infty, \sqrt{5}]$ D) $(\sqrt{5}, \infty)$

Solve the inequality. Write the solution set using interval notation and graph it.

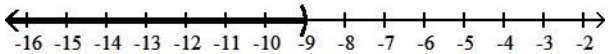
45) $x + 7 < -2$ 45) _____



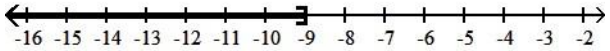
A) [-9, ∞)



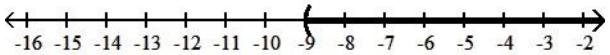
B) (-∞, -9)



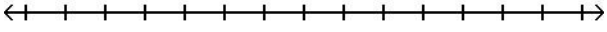
C) (-∞, -9]



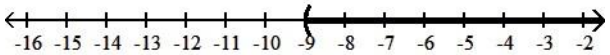
D) (-9, ∞)



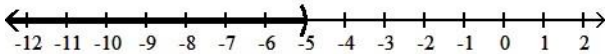
46) $-7x + 2 > -8x - 7$ 46) _____



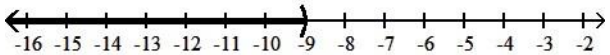
A) (-9, ∞)



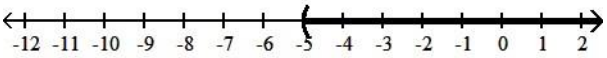
B) (-∞, -5)



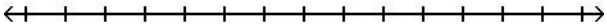
C) (-∞, -9)



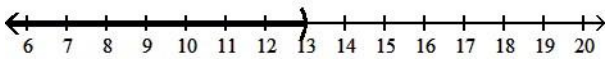
D) (-5, ∞)



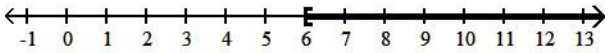
47) $13x - 9 \leq 12x - 3$ 47) _____



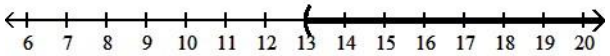
A) $(-\infty, 13)$



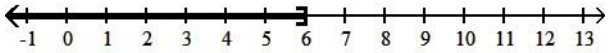
B) $[6, \infty)$



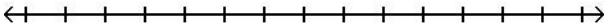
C) $(13, \infty)$



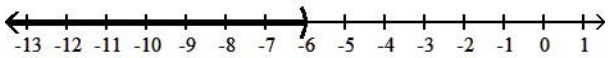
D) $(-\infty, 6]$



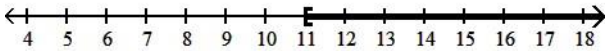
48) $-6x + 3 \geq -7x + 14$ 48) _____



A) $(-\infty, -6)$

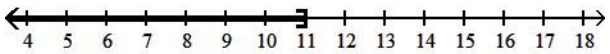


B) $[11, \infty)$

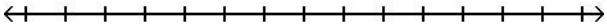


C) $(-6, \infty)$

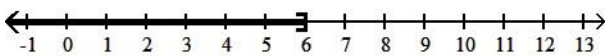
D) $(-\infty, 11]$



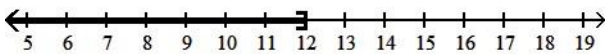
49) $6x - 11 \geq 7x - 23$ 49) _____



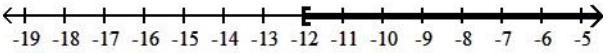
A) $(-\infty, 6]$



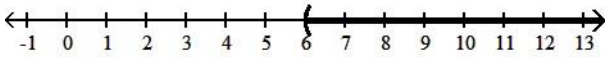
B) $(-\infty, 12]$



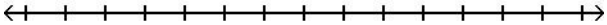
C) $[-12, \infty)$



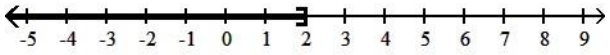
D) (6, ∞)



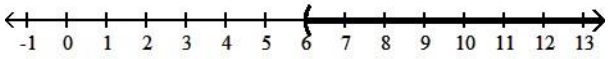
50) -8 + 6x - 8 ≥ 5x - 14 50) _____



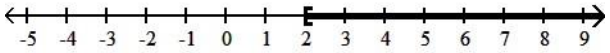
A) (-∞, 2]



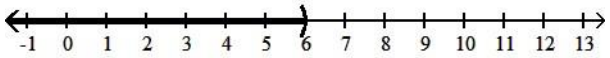
B) (6, ∞)



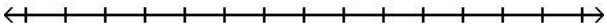
C) [2, ∞)



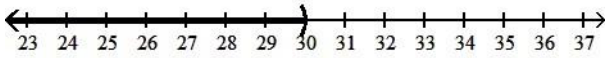
D) (-∞, 6)



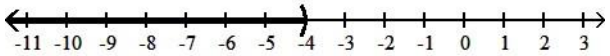
51) 30x + 15 > 5(5x - 1) 51) _____



A) (-∞, 30)

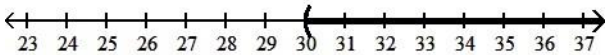


B) (-∞, -4)

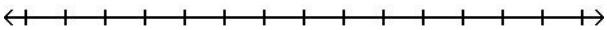


C) (-4, ∞)

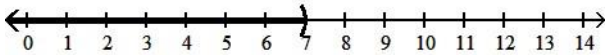
D) (30, ∞)



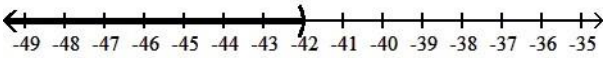
52) -6(6x + 12) < -42x - 30 52) _____



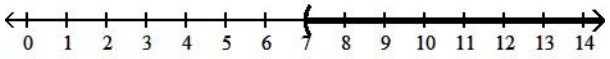
A) (-∞, 7)



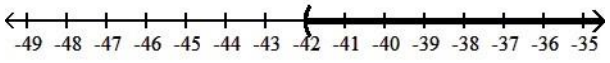
B) (-∞, -42)



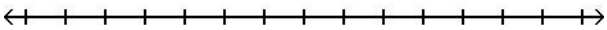
C) (7, ∞)



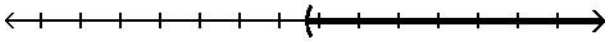
D) (-42, ∞)



53) $\frac{6x + 2}{9} < \frac{26}{3}$ 53) _____

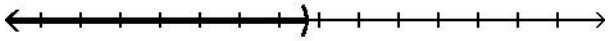


A) $\left(\frac{38}{3}, \infty\right)$



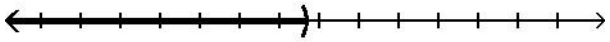
$\frac{38}{3}$

B) $\left(-\infty, \frac{26}{3}\right)$



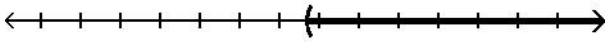
$\frac{26}{3}$

C) $\left(-\infty, \frac{38}{3}\right)$



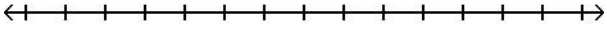
$\frac{38}{3}$

D) $\left(\frac{26}{3}, \infty\right)$

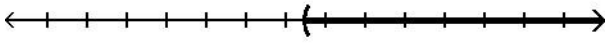


$\frac{26}{3}$

54) $\frac{8x - 7}{-5} < -\frac{33}{8}$ 54) _____

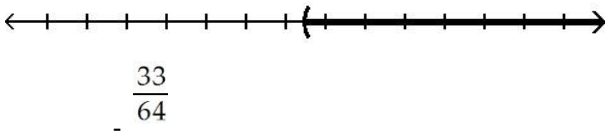


A) $\left(\frac{221}{8}, \infty\right)$



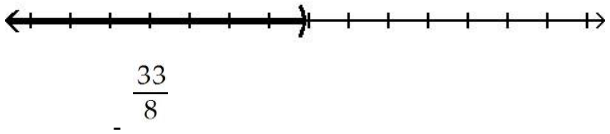
$\frac{221}{8}$

B) $\left(-\frac{33}{64}, \infty\right)$



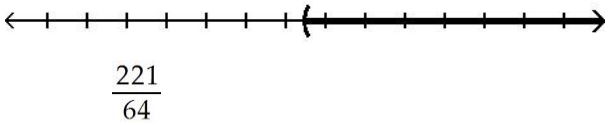
$-\frac{33}{64}$

C) $\left(-\infty, -\frac{33}{8}\right)$



$-\frac{33}{8}$

D) $\left(\frac{221}{64}, \infty\right)$



$\frac{221}{64}$

Write as a single interval.

55) [1, ∞) ∪ (6, ∞) 55) _____

A) [1, ∞) B) ∅ C) (6, ∞) D) [1, 6)

56) (-3, ∞) ∩ (9, ∞) 56) _____

A) ∅ B) (9, ∞) C) (-3, ∞) D) (-3, 9)

57) (-∞, -15) ∩ (-11, ∞) 57) _____

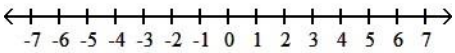
A) ∅ B) (-15, ∞) C) (-15, -11) D) [-15, -11]

58) (-∞, -8) ∪ (-11, ∞) 58) _____

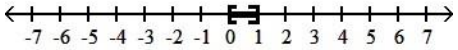
A) (-11, -8) B) (-11, ∞) C) ∅ D) (-∞, ∞)

Solve the compound inequality. Write the solution set using interval notation and graph it.

59) 5x - 1 < 4 and x - 2 > -1 59) _____

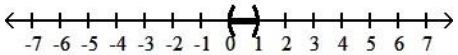


A) [0, 1]

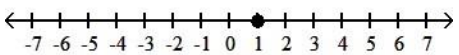


B) ∅

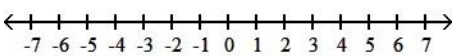
C) (0, 1)



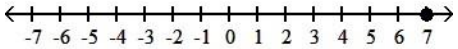
D) {1}



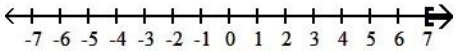
60) 4x - 10 ≤ 18 and 2x - 1 ≥ 13 60) _____



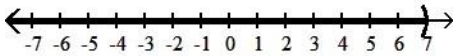
A) {7}



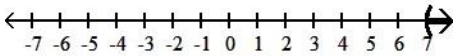
B) [7, ∞)



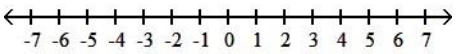
C) (-∞, 7)



D) (7, ∞)

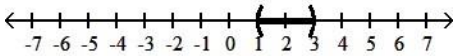


61) $6x - 4 < 2x$ or $-2x \leq -6$ 61) _____

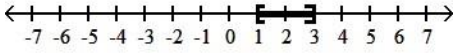


A) ∅

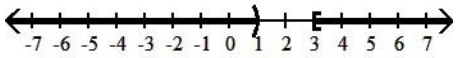
B) (1, 3)



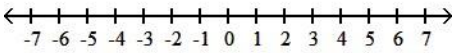
C) [1, 3]



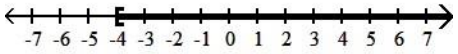
D) (-∞, 1) ∪ [3, ∞)



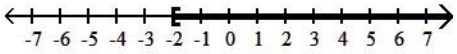
62) $-3x + 1 \geq 7$ or $5x + 3 \geq -17$ 62) _____



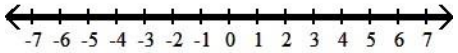
A) [-4, ∞)



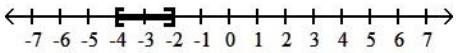
B) [-2, ∞)



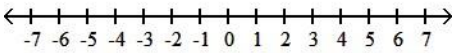
C) (-∞, ∞)



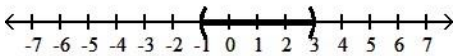
D) [-4, -2]



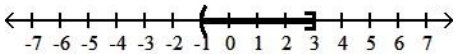
63) $0 < 3y + 3 \leq 12$ 63) _____



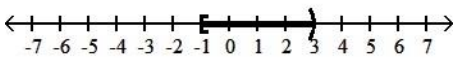
A) (-1, 3)



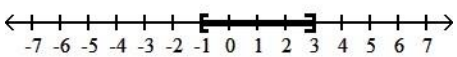
B) (-1, 3]



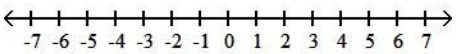
C) [-1, 3)



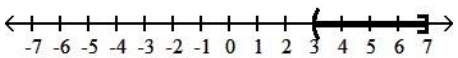
D) [-1, 3]



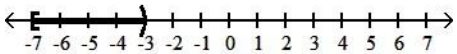
64) $14 < -4b + 2 \leq 30$ 64) _____



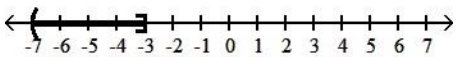
A) (3, 7]



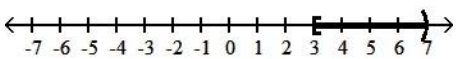
B) [-7, -3)



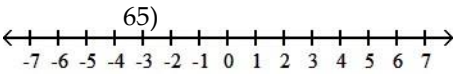
C) (-7, -3]



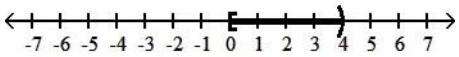
D) [3, 7)

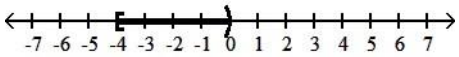


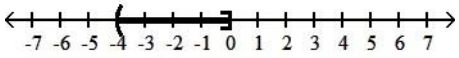
65) $4 < -5x + 4 \leq 24$

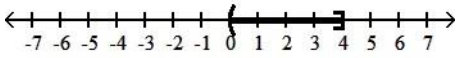
65) 

___
___

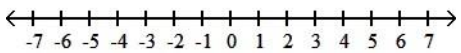
A) [0, 4) 

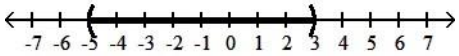
B) [-4, 0) 

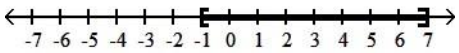
C) (-4, 0] 

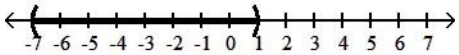
D) (0, 4] 

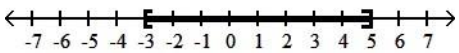
66) $-1 \le \frac{x+1}{2} \le 3$ 66) _____



A) [-5, 3] 

B) [-1, 7] 

C) (-7, 1) 

D) [-3, 5] 

Solve the absolute value inequality. Write the solution set using interval notation.

67) $|x| \le 6$ 67) _____

A) $(-\infty, -6]$ B) $(-\infty, -6] \cup [6, \infty)$ C) $(-\infty, 6]$ D) $[-6, 6]$

68) $|7x - 6| \ge 4$ 68) _____

A) $\left(-\infty, -\frac{10}{7}\right] \cup [4, \infty)$ B) $\left[\frac{2}{7}, \frac{10}{7}\right]$

C) $\left(-\infty, \frac{2}{7}\right] \cup \left[\frac{10}{7}, \infty\right)$ D) $\left[\frac{10}{7}, \infty\right)$

69) $|4x + 3| < 4$ 69) _____

A) $\left(-\infty, -\frac{7}{4}\right) \cup \left(\frac{1}{4}, \infty\right)$ B) $\left(-\infty, -\frac{7}{4}\right)$

C) $\left(-\frac{7}{4}, \frac{1}{4}\right)$ D) $(-\infty, 4)$

70) $|b - 1| - 3 > 18$ 70) _____

A) $(-\infty, -20) \cup (22, \infty)$ B) $(-\infty, -20) \cup (16, \infty)$

C) $(-\infty, -16) \cup (20, \infty)$ D) $(-20, 22)$

71) $2|x - 3| < 4$ 71) _____

A) $(-\infty, -5) \cup (-1, \infty)$ B) $(1, 5)$

C) $(-5, -1)$ D) $(-\infty, 1) \cup (5, \infty)$

72) $7|x + 4| \ge 4$ 72) _____

A)

$\left(-\infty, \frac{32}{7}\right] \cup \left[\frac{24}{7}, \infty\right)$

B) $\left(-\infty, -\frac{32}{7}\right] \cup \left[-\frac{24}{7}, \infty\right)$

C) $\left(-\frac{24}{7}, -\frac{32}{7}\right)$

D) $\left(-\infty, -\frac{24}{7}\right] \cup \left[-\frac{32}{7}, \infty\right)$

73) $\left|\frac{x-7}{2}\right| \geq 8$ 73) _____

A) (-9, 23)
B) (-∞, -9] ∩ [23, ∞)
C) [-9, 23]
D) (-∞, -9] ∪ [23, ∞)

74) $\left|\frac{1-4x}{6}\right| \leq 2$ 74) _____

A) $\left[-\frac{11}{4}, \frac{13}{4}\right]$
B) $\left(-\infty, -\frac{11}{4}\right] \cup \left[\frac{13}{4}, \infty\right)$
C) ∅
D) $\left(-\infty, -\frac{11}{4}\right) \cap \left(\frac{13}{4}, \infty\right)$

75) $|17x - 7| < -3$ 75) _____

A) $\left(\frac{4}{17}, \frac{10}{17}\right)$
B) (-∞, ∞)
C) ∅
D) $\left(-\infty, \frac{4}{17}\right) \cup \left(\frac{10}{17}, \infty\right)$

76) $4 \leq |5x - 7|$ 76) _____

A) $\left(-\infty, \frac{3}{5}\right] \cup \left[\frac{11}{5}, \infty\right)$
B) $\left[\frac{3}{5}, \frac{11}{5}\right]$
C) $\left(-\infty, -\frac{11}{5}\right] \cup [4, \infty)$
D) $\left[\frac{11}{5}, \infty\right)$

Write an inequality of the form $|x-a|<k$ or of the form $|x-a|>k$ so that the inequality has the given solution set.

77) (-2, 2) 77) _____

A) $|x| < 2$
B) $|x+2| > 0$
C) $|x-2| > 0$
D) $|x| > 2$

78) [-10, 10] 78) _____

A) $|x-10| \geq 0$
B) $|x| \leq 10$
C) $|x| \geq 10$
D) $|x+10| \geq 0$

79) (-∞, -3) ∪ (3, ∞) 79) _____

A) $|x| < 3$
B) $|x| > 3$
C) $|x-3| > 0$
D) $|x+3| > 0$

80) (-∞, -5] ∪ [5, ∞) 80) _____

A) $|x-5| \geq 0$
B) $|x| \leq 5$
C) $|x+5| \geq 0$
D) $|x| \geq 5$

81) (-∞, 4) ∪ (8, ∞) 81) _____

A) $|x| > 4$
B) $|x-6| < 2$
C) $|x-6| > 2$
D) $|x| > 8$

82) $(-\infty, 3] \cup [13, \infty)$ 82) _____

A) $|x| \geq 3$ B) $|x - 8| \leq 5$ C) $|x| \geq 13$ D) $|x - 8| \geq 5$

83) $(7, 11)$ 83) _____

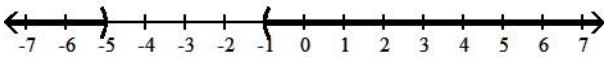
A) $|x| < 7$ B) $|x - 9| < 2$ C) $|x - 9| > 2$ D) $|x| < 11$

84) $[-15, -1]$ 84) _____

A) $|x| \leq -1$ B) $|x + 8| \geq 7$ C) $|x| \leq -15$ D) $|x + 8| \leq 7$

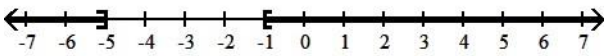
Write an absolute value inequality that has the given solution set.

85) 85) _____



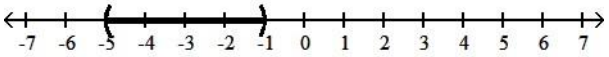
A) $|x + 3| > 2$ B) $|x| > -6$ C) $|x - 3| > 2$ D) $|x - 6| < 2$

86) 86) _____



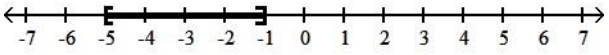
A) $|x| \geq -6$ B) $|x - 3| \geq 2$ C) $|x - 6| \leq 2$ D) $|x + 3| \geq 2$

87) 87) _____



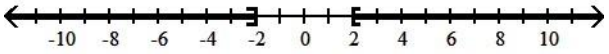
A) $|x| < -6$ B) $|x + 3| < 2$ C) $|x - 3| > 2$ D) $|x - 6| < 2$

88) 88) _____



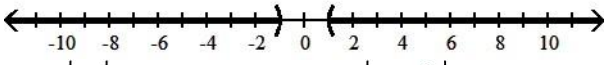
A) $|x - 3| \geq 2$ B) $|x + 3| \leq 2$ C) $|x - 6| \leq 2$ D) $|x| \leq -6$

89) 89) _____



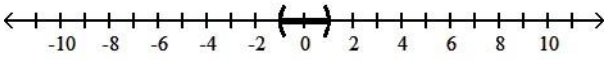
A) $|x - 2| \geq 0$ B) $|x - 2| \leq 0$ C) $|x| \geq 2$ D) $|x| \leq 2$

90) 90) _____



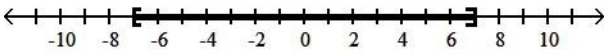
A) $|x| > 1$ B) $|x - 1| > 0$ C) $|x - 1| < 0$ D) $|x| < 1$

91) 91) _____



A) $|x - 1| > 0$ B) $|x - 1| < 0$ C) $|x| > 1$ D) $|x| < 1$

92) 92) _____



A) $|x| \geq 7$ B) $|x - 7| \leq 0$ C) $|x| \leq 7$ D) $|x - 7| \geq 0$

Solve the problem.

93) An omelette costs $1.00 more than Mario's order of pancakes. After treating his family to breakfast, Mario is sure that 4 omelettes and 3 orders of pancakes cost more than $25 but not more than $40, including tax of 7% and a tip of $3.50. In what price range is an order of pancakes? 93) _____

A) ($ 2.30, $ 4.30) B) [$ 2.27, $ 4.27] C) ($ 2.27, $ 4.27] D) ($ 2.30, $ 4.30]

94) Max scored 69 and 59 on his first two tests in Biology 101. What must he score on the third test to get an average for the three tests above 77? 94) _____

A) [104, ∞) B) (103, ∞) C) (100, ∞) D) [103, ∞)

95) There is less than $1300 difference between the tuition at State University and Highbrow College. The tuition at Highbrow is $4500. Express this as an absolute value inequality. Use "x" for the tuition of State University. 95) _____

A) $|x - 4500| < 1300$ B) $|x - 1300| < 4500$

C) $x > 4500 - |1300|$ D) $x < |3200|$

96) A salesperson has two job offers. Company A offers a weekly salary of $ 280 plus commission of 8% of sales. Company B offers a weekly salary of $ 560 plus commission of 4% of sales. What is the amount of sales above which Company A's offer is the better of the two? 96) _____

A) $ 14,000 B) $ 3500 C) $ 7100 D) $ 7000

97) Company A rents copiers for a monthly charge of $ 240 plus 12 cents per copy. Company B rents copiers for a monthly charge of $ 480 plus 6 cents per copy. What is the number of copies above which Company A's charges are the higher of the two? 97) _____

A) 4100 copies B) 2000 copies C) 4000 copies D) 8000 copies

98) A car rental company has two rental rates. Rate 1 is $\$40$ per day plus $\$.10$ per mile. Rate 2 is $\$80$ per day plus $\$.05$ per mile. If you plan to rent for one day, how many miles would you need to drive to pay less by taking Rate 2? 98) _____

A) more than 1600 miles B) more than 400 miles

C) more than 800 miles D) more than 900 miles

99) A bag of marbles has twice as many blue marbles as green marbles, and the bag has at least 51 marbles in it. At least how many green marbles does it have? 99) _____

A) At least 17 green marbles B) At least 34 green marbles

C) At least 26 green marbles D) At least 18 green marbles

100) Jon has 773 points in his math class. He must have 64% of the 1400 points possible by the end of the term to receive credit for the class. What is the minimum number of additional points he must earn by the end of the term to receive credit for the class? 100) _____

A) 896 points B) 627 points C) 123 points D) 495 points

101) The inequality $|T - 59| \leq 14$ describes the range of monthly average temperatures T in degrees Fahrenheit at a City X. (i) Solve the inequality. (ii) If the high and low monthly average temperatures satisfy equality, interpret the inequality. 101) _____

A) $33 \leq T$; The monthly averages are always greater than or equal to $33°F$.

B) $T \leq 73$; The monthly averages are always less than or equal to $73°F$.

C) $45 \leq T \leq 73$; The monthly averages are always within $14°$ of $59°F$.

D) $33 \le T \le 85$; The monthly averages are always within $26°$ of $59°F$.

102) The inequality $|T - 32.1| \le 8.5$ describes the range of monthly average temperatures T in degrees Fahrenheit at a City X. (i) Solve the inequality. (ii) If the high and low monthly average temperatures satisfy equality, interpret the inequality. 102) _____

A) $-40.6 \le T \le 49.1$; The monthly averages are always within $17°$ of $32.1°F$.

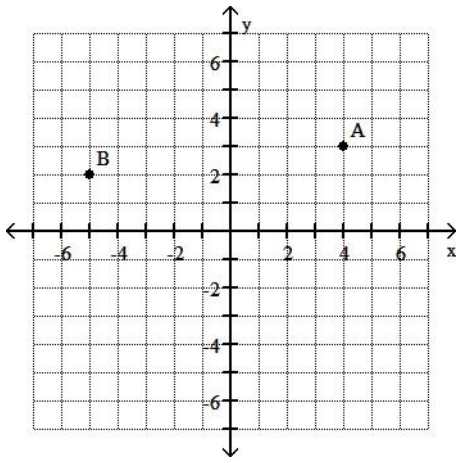
B) $-36.1 \le T \le 40.1$; The monthly averages are always within $8°$ of $32.1°F$.

C) $28.1 \le T \le 36.1$; The monthly averages are always within $4°$ of $32.1°F$.

D) $23.6 \le T \le 40.6$; The monthly averages are always within $8.5°$ of $32.1°F$.

Write the ordered pair for each point shown in the xy plane.

103) 103) _____



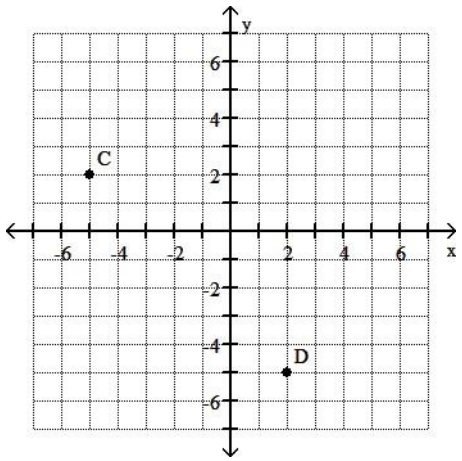
A) A = (4, 3), B = (-5, 2)

B) A = (4, 3), B = (2, -5)

C) A = (4, 2), B = (3, 2)

D) A = (3, 24), B = (2, -5)

104) 104) _____



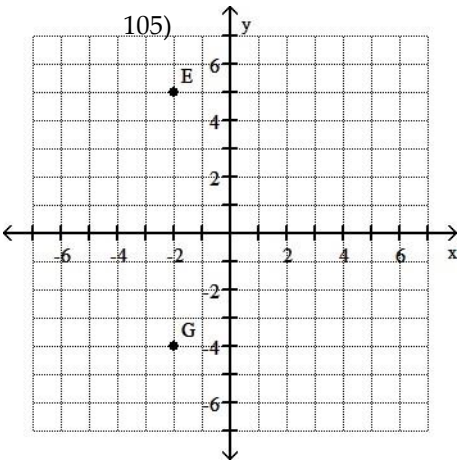
A) C = (2, 6), D = (-5, 2)

B) C = (-5, 2), D = (2, -5)

C) C = (-5, -5), D = (2, -5)

D) C = (-5, 2), D = (-5, 2)

105)

105) 

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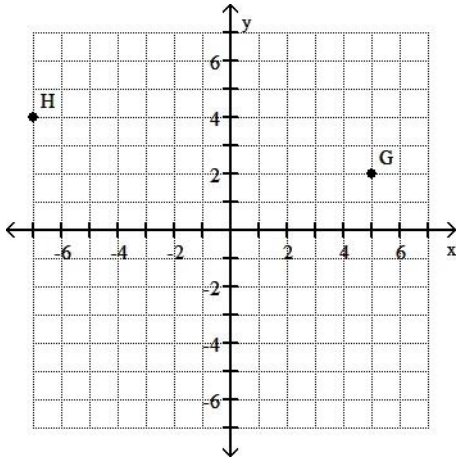
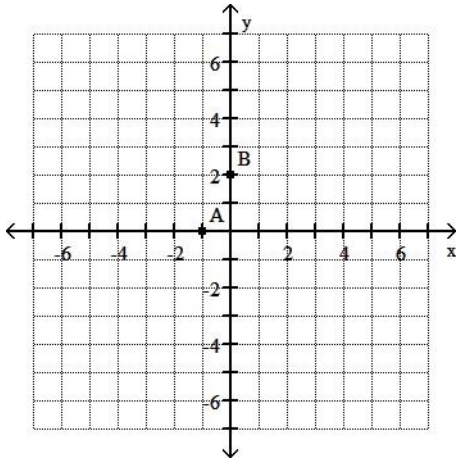
A) E = (-2, -4), G = (5, -4)
B) E = (-2, 5), G = (-4, -2)
C) E = (5, 12), G = (-4, -2)
D) E = (-2, 5), G = (-2, -4)

106) 

106) _____

A) G = (2, 26), H = (4, -7)
B) G = (5, 2), H = (-7, 4)
C) G = (5, 2), H = (4, -7)
D) G = (5, 4), H = (2, 4)

107) 

107) _____

A) A = (0, -1), B = (0, 2)
B) A = (0, -1), B = (2, 0)
C) A = (-1, 0), B = (0, 2)
D) A = (-1, 0), B = (2, 0)

Name the quadrant in which the point is located, or the axis on which it lies .

108) (5, 20) 108) _____

A) Quadrant III B) Quadrant II C) Quadrant IV D) Quadrant I

109) (-10, 4) 109) _____

A) Quadrant II B) Quadrant IV C) Quadrant III D) Quadrant I

110) (-5, -10) 110) _____

A) Quadrant III B) Quadrant I C) Quadrant IV D) Quadrant II

111) (18, -2) 111) _____

A) Quadrant III B) Quadrant IV C) Quadrant II D) Quadrant I

112) (-5, 0) 112) _____

A) x-axis B) y-axis C) Quadrant III D) Quadrant II

113) (0, -2) 113) _____

A) Quadrant II B) y-axis C) x-axis D) Quadrant III

Find the distance between the points, and find the midpoint of the line segment joining them.

114) (4, 2) and (8, 4) 114) _____

A) $2\sqrt{5}$; $(6, 3)$ B) 6; (-4, -2) C) 6; (12, 6) D) $2\sqrt{5}$; $(3, 6)$

115) (-8, 2) and (-9, -5) 115) _____

A) 8; (1, 7)

B) $5\sqrt{2}$; $\left(-\frac{17}{2}, -\frac{3}{2}\right)$

C) $5\sqrt{2}$; $\left(-\frac{3}{2}, -\frac{17}{2}\right)$

D) 8; (-17, -3)

116) (5 y, 4) and (6 y, 1) 116) _____

A) $\sqrt{y^2 + 9}$; $\left(\frac{5}{2}, \frac{11}{2}\right)$

B) y + 3; (y, 3)

C) $\sqrt{y^2 + 9}$; $\left(\frac{11}{2}y, \frac{5}{2}\right)$

D) y + 3; (11 y, 5)

117) $(\pi, 0)$ and $(\pi/4, 1)$ 117) _____

A) $\frac{\sqrt{9\pi + 16}}{4}$; $\left(\frac{5\pi}{8}, \frac{1}{2}\right)$

B) $\frac{\sqrt{9\pi^2 + 16}}{4}$; $\left(\frac{5\pi}{4}, \frac{1}{2}\right)$

C) $\frac{\sqrt{9\pi^2 + 1}}{4}$; $\left(\frac{3\pi}{8}, \frac{1}{2}\right)$

D) $\frac{\sqrt{9\pi^2 + 16}}{4}$; $\left(\frac{5\pi}{8}, \frac{1}{2}\right)$

Find the center and radius of the circle.

118) $x^2 + y^2 = 64$ 118) _____

A) Center: (1, 1); radius: 64 B) Center: (0, 0) ; radius: 64

C) Center: (1, 1) ; radius: 8 D) Center: (0, 0); radius: 8

119) $(x - 7)^2 + y^2 = 9$ 119) _____

A) Center: (0, -7); radius: 9 B) Center: (7, 0); radius: 3

C) Center: (0, 7); radius: 3 D) Center: (-7, 0); radius: 9

120) $(x - 8)^2 + (y + 6)^2 = 16$ 120) _____

A) Center: (8, -6); radius: 4 B) Center: (8, -6); radius: 16

C) Center: (-6, 8); radius: 16

D) Center: (-6, 8); radius: 4

121) $(x + 5)^2 + (y - 1)^2 = 144$ 121) _____

A) Center: (-5, 1); radius: 12

B) Center: (1, -5); radius: 144

C) Center: (-5, 1); radius: 144

D) Center: (1, -5); radius: 12

122) $(x - 2)^2 + (y - 8)^2 = 100$ 122) _____

A) Center: (8, 2); radius: 10

B) Center: (-2, -8); radius: 100

C) Center: (-8, -2); radius: 10

D) Center: (2, 8); radius: 10

123) $x^2 + (y - 7)^2 = 36$ 123) _____

A) Center: (-7, 0); radius: 6

B) Center: (7, 0); radius: 6

C) Center: (0, 7); radius: 6

D) Center: (0 , 7); radius: 36

124) $y^2 = 81 - (x + 6)^2$ 124) _____

A) Center: (0, 6); radius: 9

B) Center: (0, -6); radius: 81

C) Center: (6, 0); radius: 81

D) Center: (-6, 0); radius: 9

125) $x^2 = 64 - (y + 3)^2$ 125) _____

A) Center: (-3, 0); radius: 64

B) Center: (3, 0); radius: 64

C) Center: (0, 3); radius: 8

D) Center: (0, -3); radius: 8

126) $(x - 4)^2 = 36 - (y - 3)^2$ 126) _____

A) Center: (4, 3); radius: 6

B) Center: (-3, -4); radius: 36

C) Center: (3, 4); radius: 6

D) Center: (-4, -3); radius: 36

127) $(y + 8)^2 = 144 - (x + 2)^2$ 127) _____

A) Center: (-8, -2); radius: 144

B) Center: (8, 2); radius: 144

C) Center: (-2, -8); radius: 12

D) Center: (2, 8); radius: 12

Write the standard equation for the circle.

128) Center at (4, -7), radius 11 128) _____

A) $(x + 4)^2 + (y - 7)^2 = 121$

B) $(x - 4)^2 + (y + 7)^2 = 121$

C) $(x - 7)^2 + (y + 4)^2 = 11$

D) $(x + 7)^2 + (y - 4)^2 = 11$

129) Center at (4, 0), radius 11 129) _____

A) $(x + 4)^2 + y^2 = 121$

B) $(x - 4)^2 + y^2 = 121$

C) $x^2 + (y + 4)^2 = 11$

D) $x^2 + (y - 4)^2 = 11$

130) Center at (-8, -4), radius $\sqrt{17}$ 130) _____

A) $(x - 4)^2 + (y - 8)^2 = 289$

B) $(x + 8)^2 + (y + 4)^2 = 17$

C) $(x + 4)^2 + (y + 8)^2 = 289$

D) $(x - 8)^2 + (y - 4)^2 = 17$

131) Center at $\left(-\frac{7}{9}, \frac{5}{9}\right)$, radius $\frac{1}{2}$ 131) _____

A) $\left(x + \frac{5}{9}\right)^2 + \left(y - \frac{7}{9}\right)^2 = \frac{1}{2}$

B) $\left(x - \frac{7}{9}\right)^2 + \left(y + \frac{5}{9}\right)^2 = \frac{1}{4}$

C) $\left(x-\frac{5}{9}\right)^2+\left(y+\frac{7}{9}\right)^2=\frac{1}{2}$

D) $\left(x+\frac{7}{9}\right)^2+\left(y-\frac{5}{9}\right)^2=\frac{1}{4}$

132) Center at (3, -6), passing through (6, -2) 132) _____

A) $(x+6)^2+(y-3)^2=9$

B) $(x-3)^2+(y+6)^2=25$

C) $(x+3)^2+(y-6)^2=25$

D) $(x-6)^2+(y+3)^2=9$

133) Center (5, 24), passing through the origin 133) _____

A) $(x-5)^2+(y-24)^2=601$

B) $(x-24)^2+(y-5)^2=601$

C) $(x-24)^2+(y-5)^2=25$

D) $(x-5)^2+(y-24)^2=25$

134) Center (11, 17), passing through (0, 17) 134) _____

A) $(x-17)^2+(y-11)^2=11$

B) $(x-11)^2+(y-17)^2=11$

C) $(x-11)^2+(y-17)^2=121$

D) $(x-17)^2+(y-11)^2=121$

135) Center (11, 2), passing through (11, 0) 135) _____

A) $(x-11)^2+(y-2)^2=4$

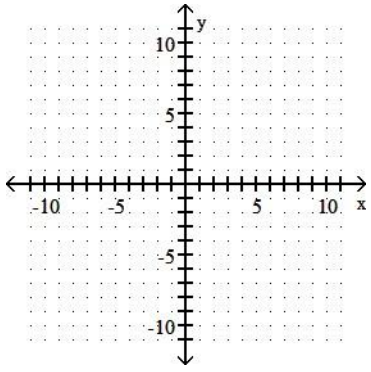
B) $(x-2)^2+(y-11)^2=121$

C) $(x-11)^2+(y-2)^2=121$

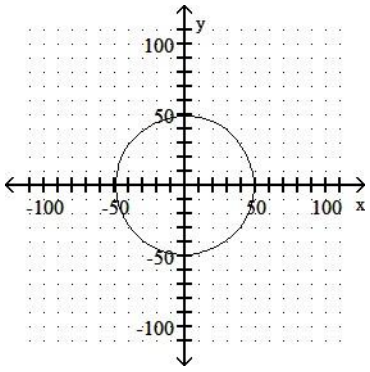
D) $(x-2)^2+(y-11)^2=2$

Graph the equation.

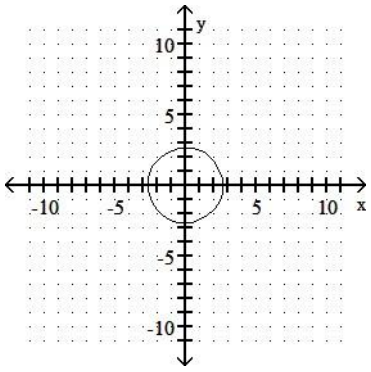
136) $x^2+y^2=49$ 136) _____



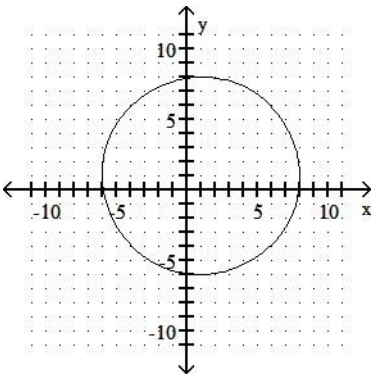
A)



B)



C)



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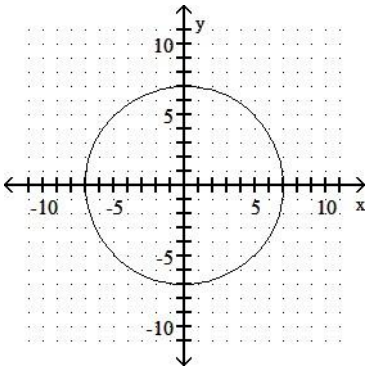
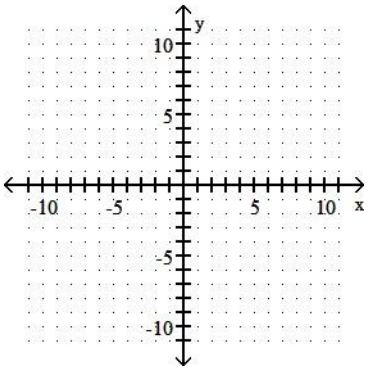
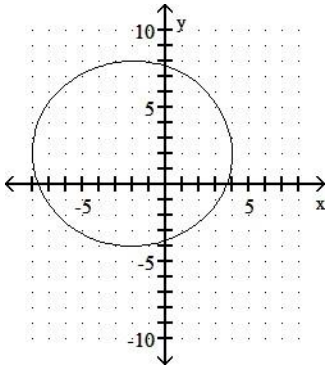


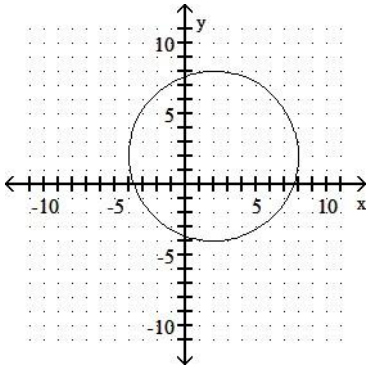
137) $(x - 2)^2 + (y - 2)^2 = 36$ 137) _____



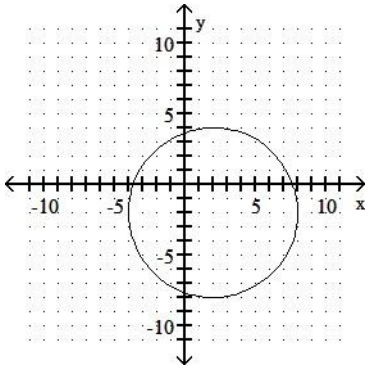
A)



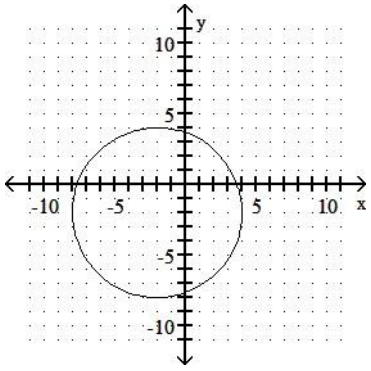
B)



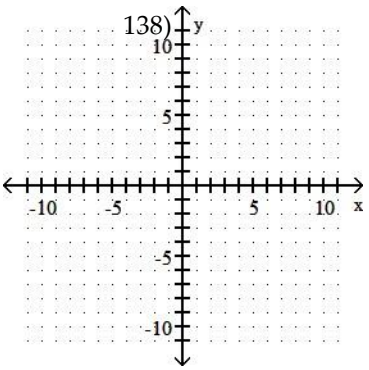
C)



D)



138) $x^2 + (y - 6)^2 = 4$

138) 

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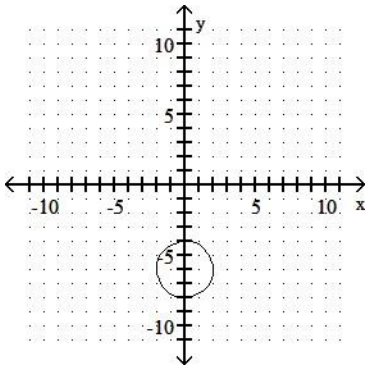
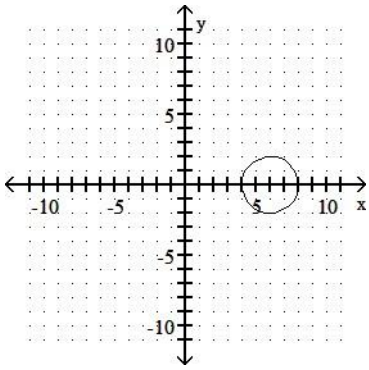
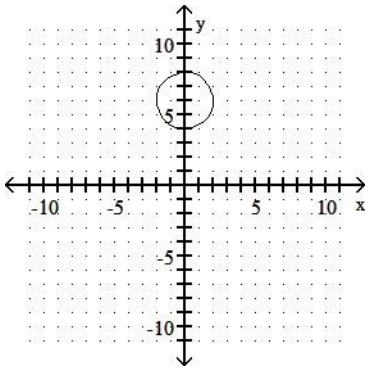
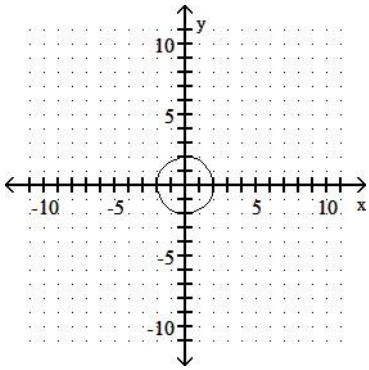
A) 

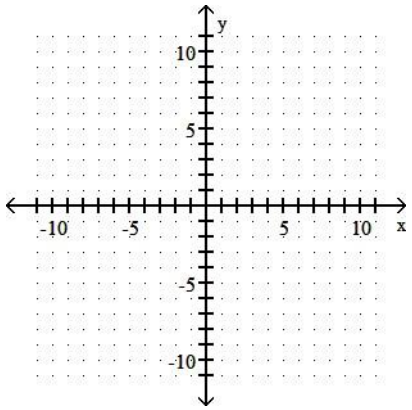
B) 

C) 

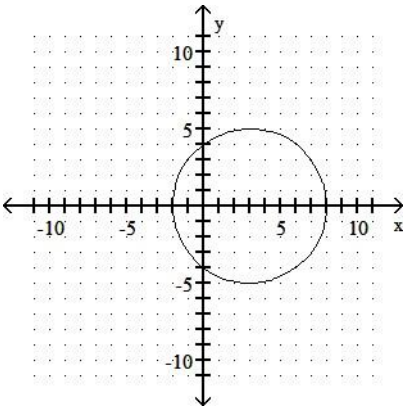
D) 

139) $(x - 5)^2 + y^2 = 9$

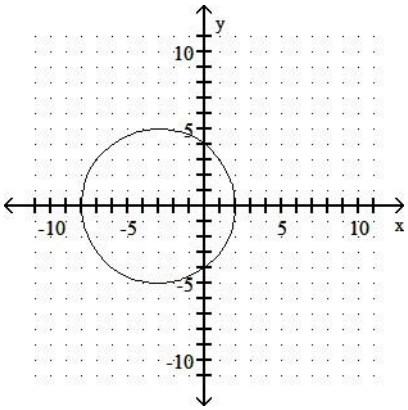
139) _____



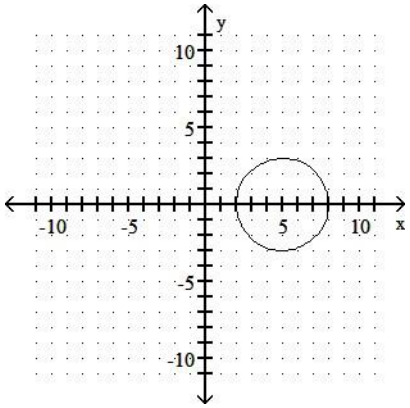
A)



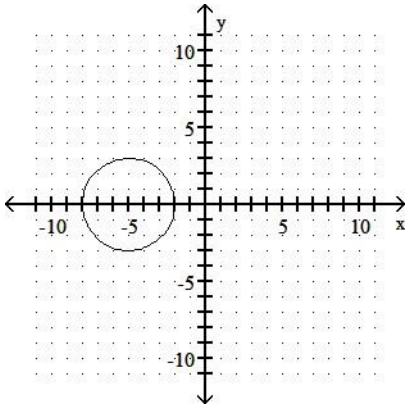
B)



C)

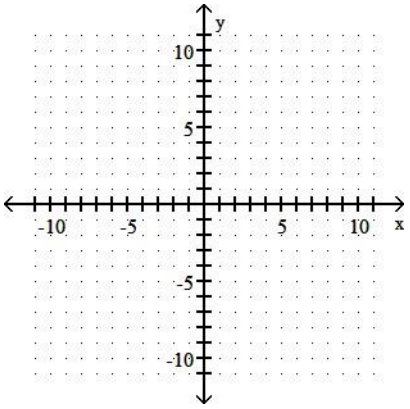


D)

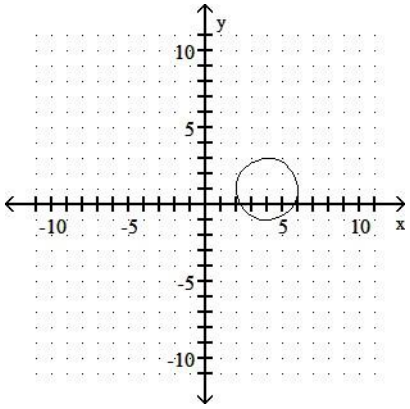


140) $(x - 4)^2 + (y - 1)^2 = 2^2$

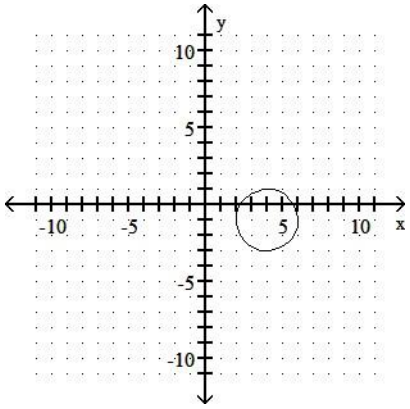
140) _____



A)



B)



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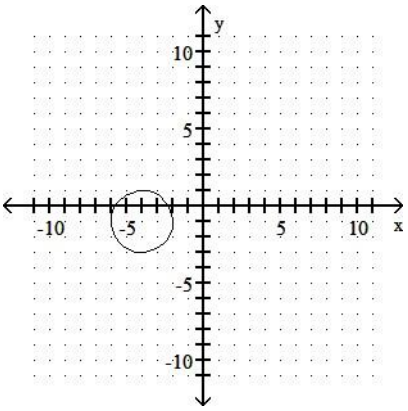
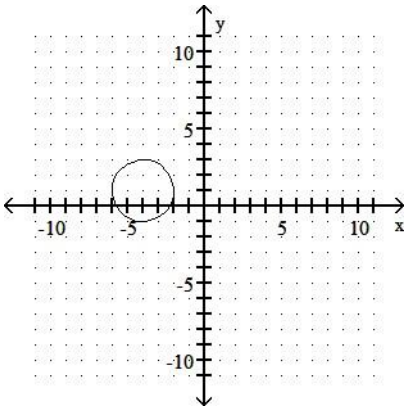
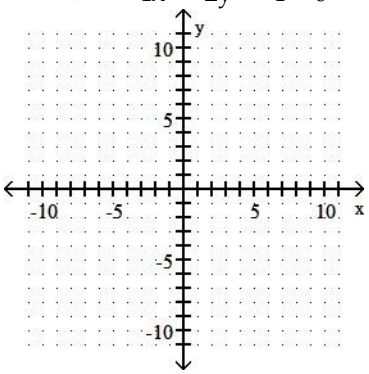


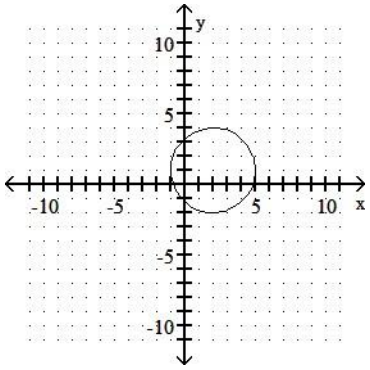
D)



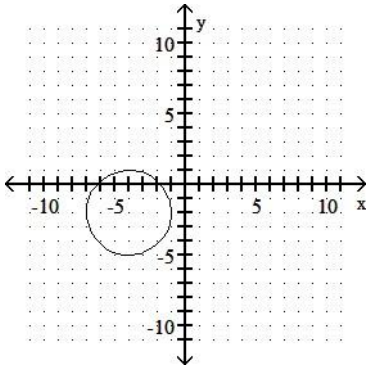
141) $x^2 + y^2 - 4x - 2y - 4 = 0$ 141) _____



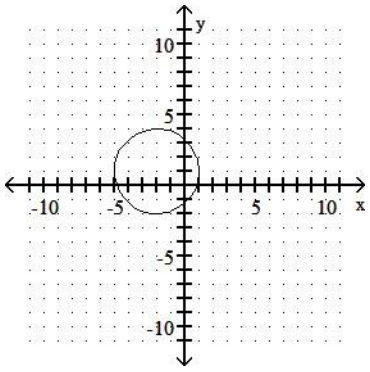
A)



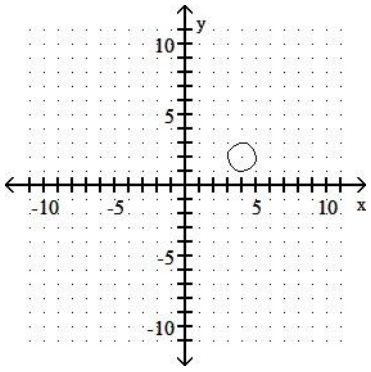
B)



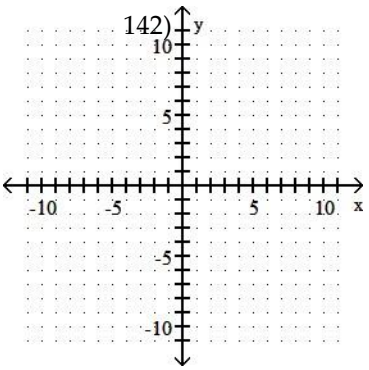
C)



D)



142) $x^2 + y^2 + 6x + 4y + 9 = 0$

142) 

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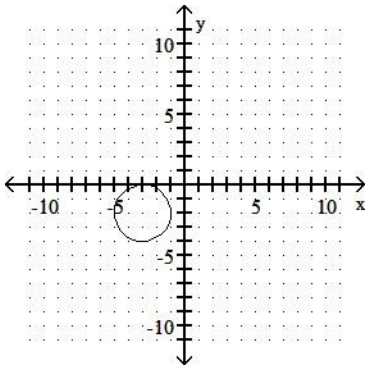
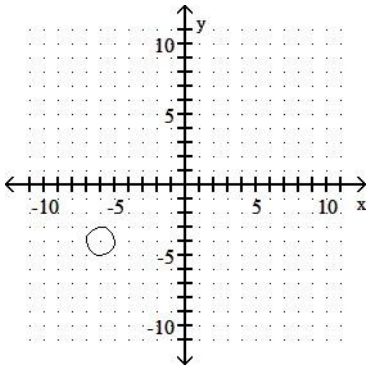
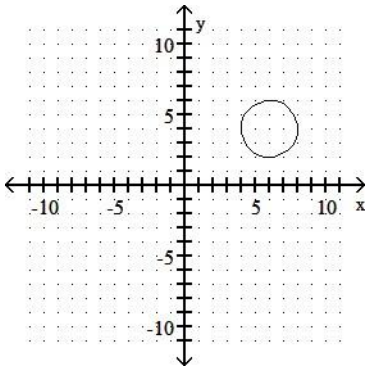
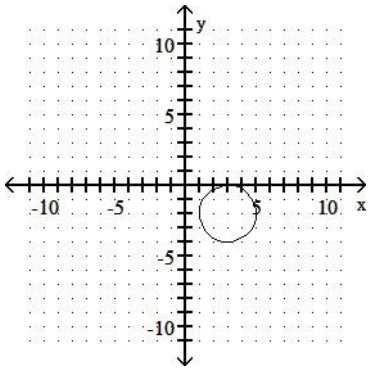
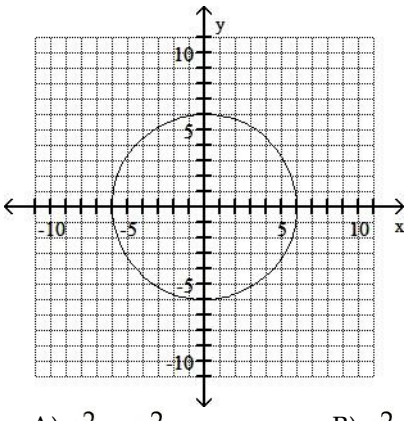
A) 

B) 

C) 

D) 

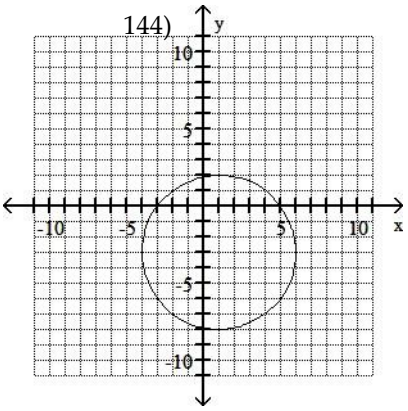
Write the standard equation for the circle.

143) 

143) _____

A) $x^2 + y^2 = 12$ B) $x^2 + y^2 = 6$ C) $x^2 + y^2 = 36$ D) $x^2 + y^2 = 16$

144)

144) 

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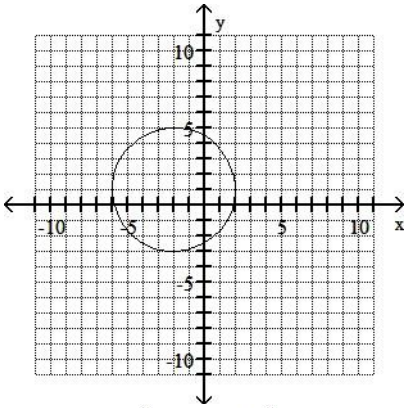
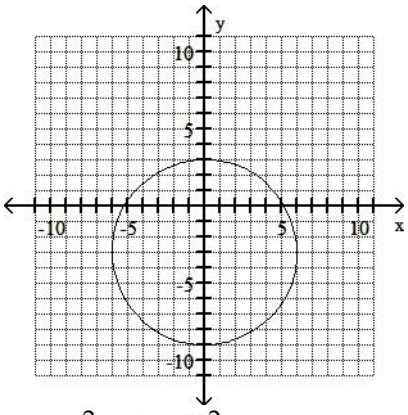
A) $(x + 1)^2 + (y - 3)^2 = 25$
B) $(x - 1)^2 + (y + 3)^2 = 25$
C) $(x - 1)^2 + (y + 3)^2 = 5$
D) $(x + 1)^2 + (y - 3)^2 = 5$

145) 

145) _____

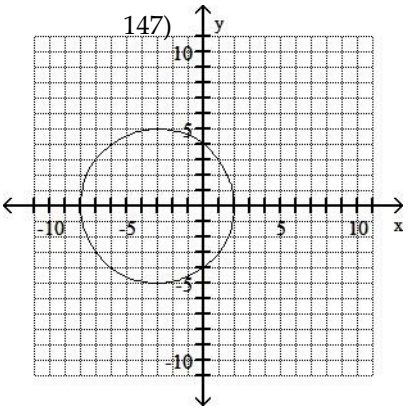
A) $(x - 2)^2 + (y + 1)^2 = 4$
B) $(x + 2)^2 + (y - 1)^2 = 16$
C) $(x + 2)^2 + (y - 1)^2 = 4$
D) $(x - 2)^2 + (y + 1)^2 = 16$

146) 

146) _____

A) $x^2 + (y + 3)^2 = 36$
B) $(x + 3)^2 + y^2 = 36$
C) $x^2 + (y + 3)^2 = 6$
D) $x^2 + (y - 3)^2 = 36$

147)

147) 

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A) $(x + 3)^2 + y^2 = 25$

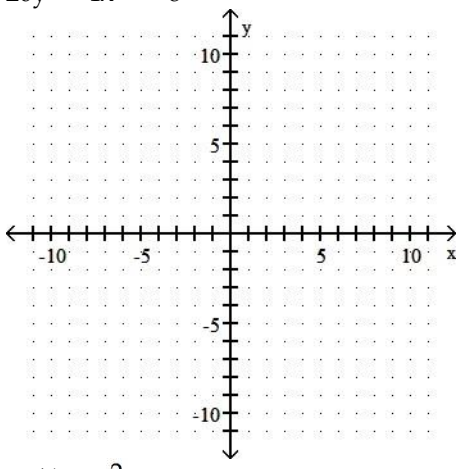
B) $(x - 3)^2 + y^2 = 25$

C) $(x + 3)^2 + y^2 = 5$

D) $x^2 + (y + 3)^2 = 25$

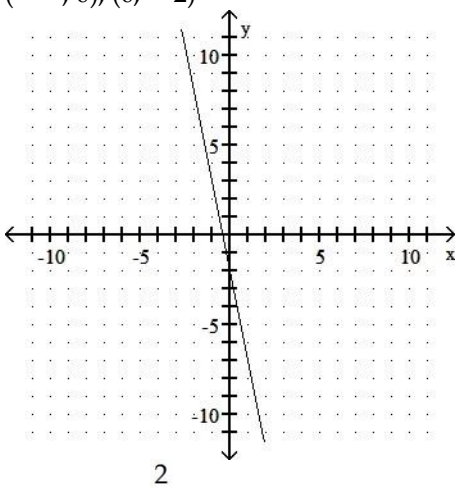
Find the x- and y-intercepts for the equation. Then graph the equation.

148) $20y - 4x = -8$ 148) _____



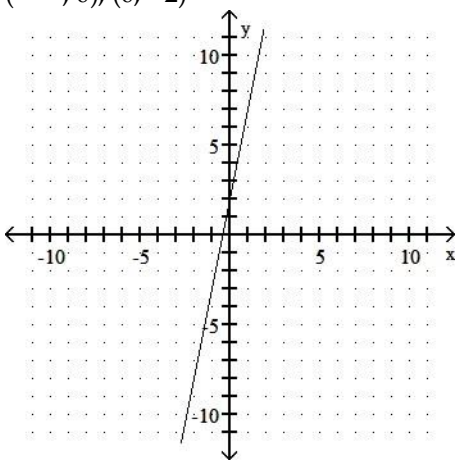
A) $\frac{2}{5}$

(- , 0), (0, -2)



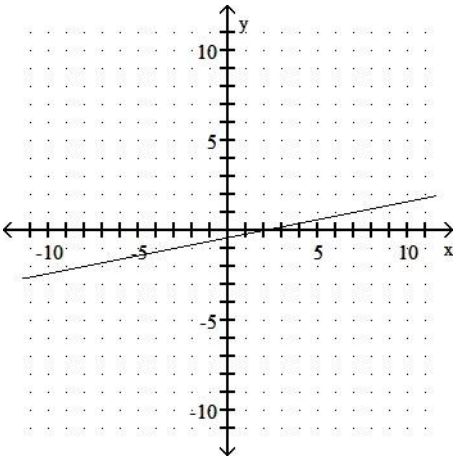
B) $\frac{2}{5}$

(- , 0), (0, 2)

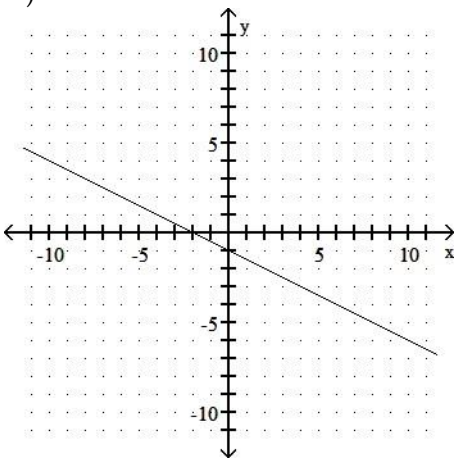


C) $\frac{2}{5}$

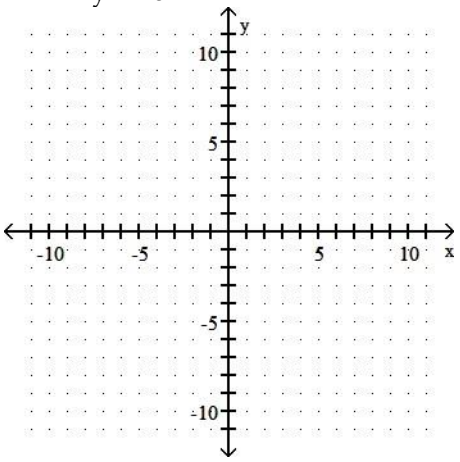
(2, 0), (0, -)



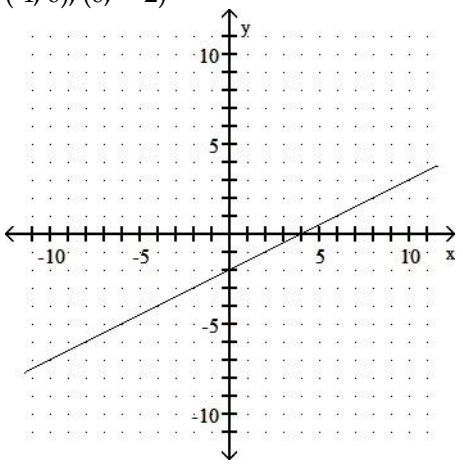
D) (-2, 0), (0, $-\frac{2}{5}$)



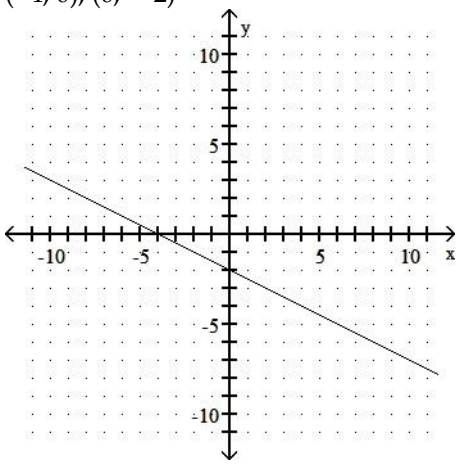
149) -2x - 4y = 8 149) _____



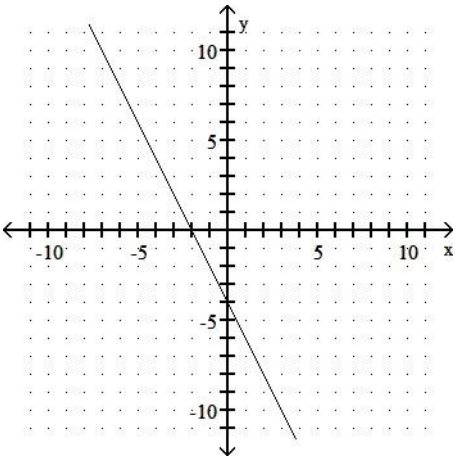
A) (4, 0), (0, -2)



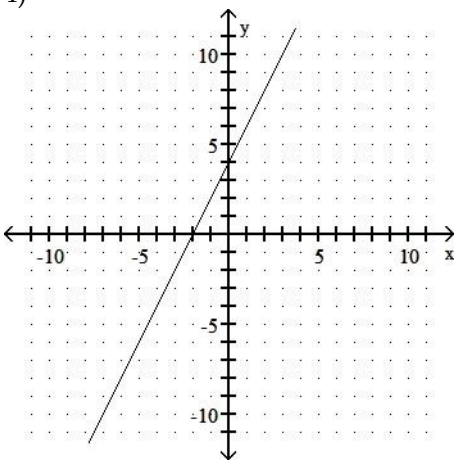
B) (-4, 0), (0, -2)



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

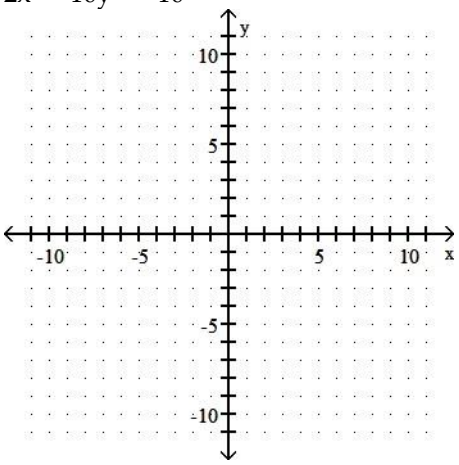


D) (-2, 0), (0, 4)

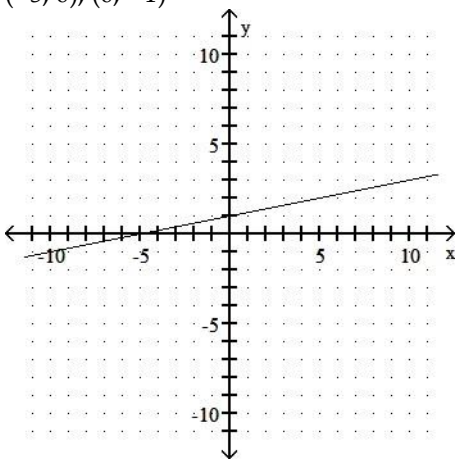


150) 2x - 10y = 10

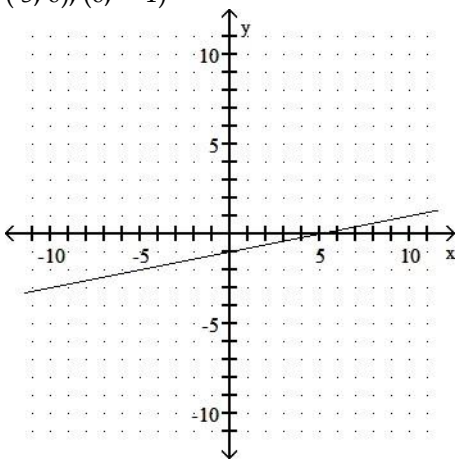
150) _____



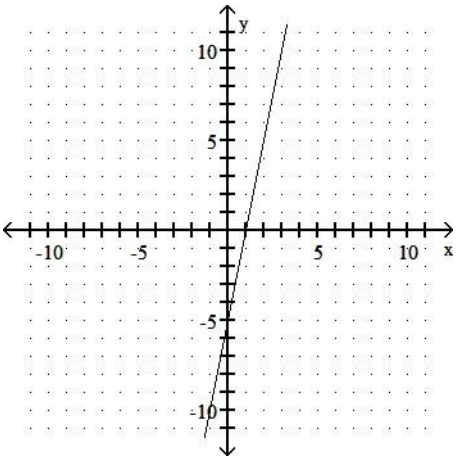
A) (-5, 0), (0, 1)



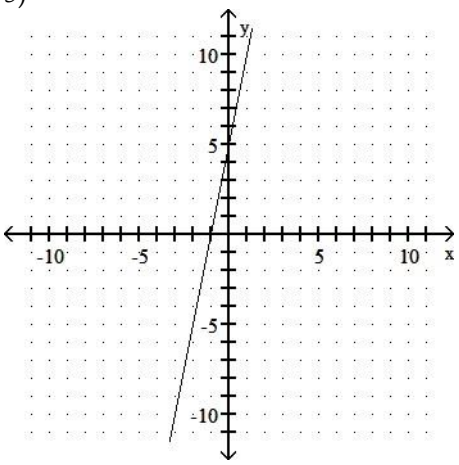
B) (5, 0), (0, -1)



C) (1, 0), (0, -5)

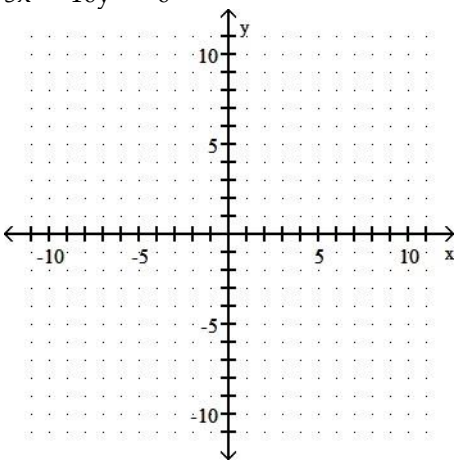


D) (-1, 0), (0, 5)

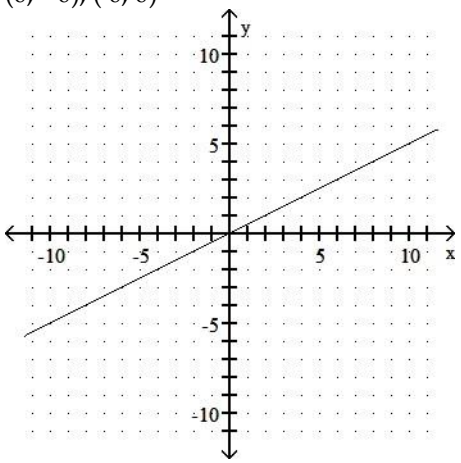


151) 5x - 10y = 0

151) _____

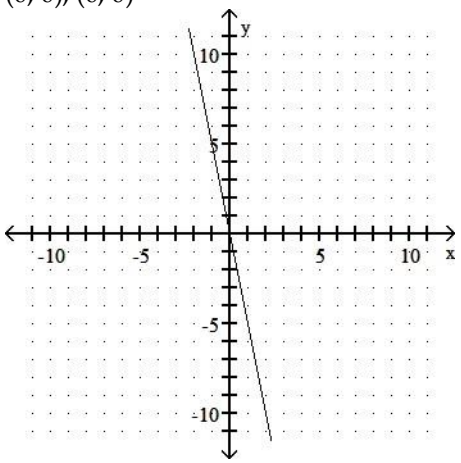


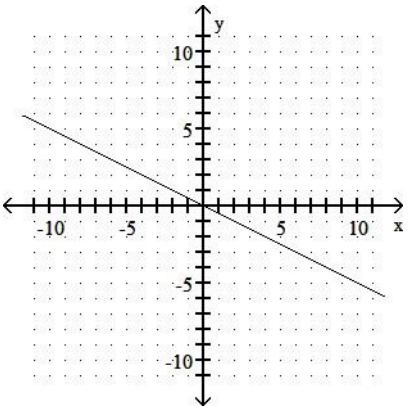
A) (0, 0), (0, 0)



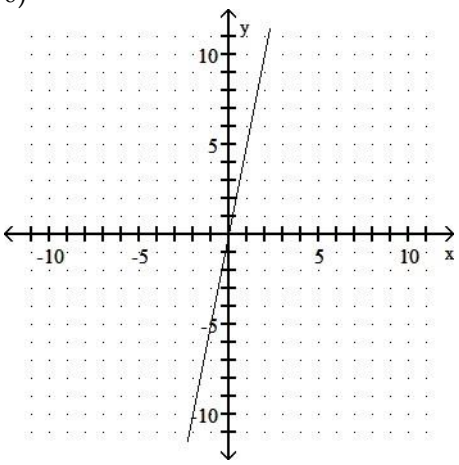
C) (0, 0), (0, 0)

B) (0, 0), (0, 0)

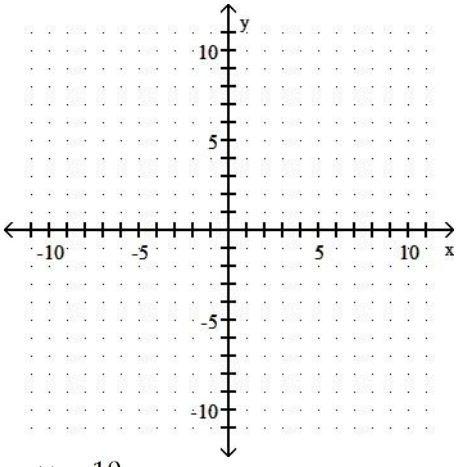




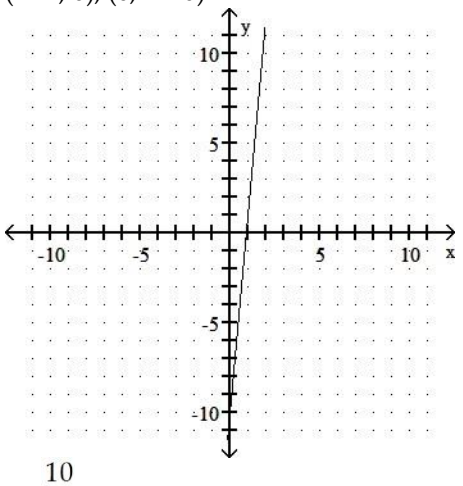
D) (0, 0), (0, 0)



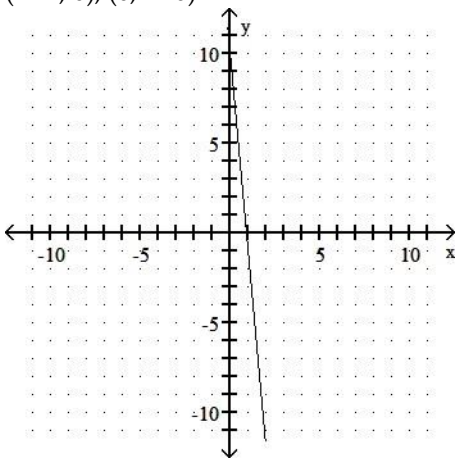
152) $\frac{11}{5}x + \frac{1}{5}y = 2$ 152) _____



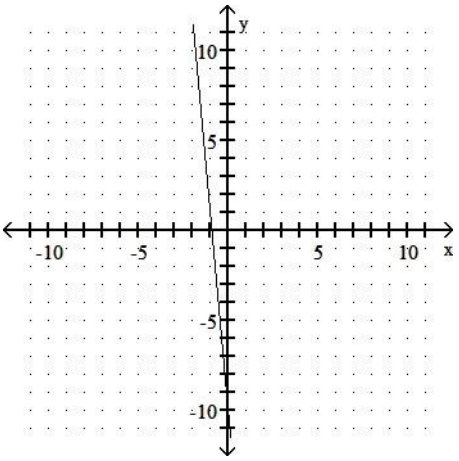
A) $\frac{10}{11}$, 0), (0, -10)



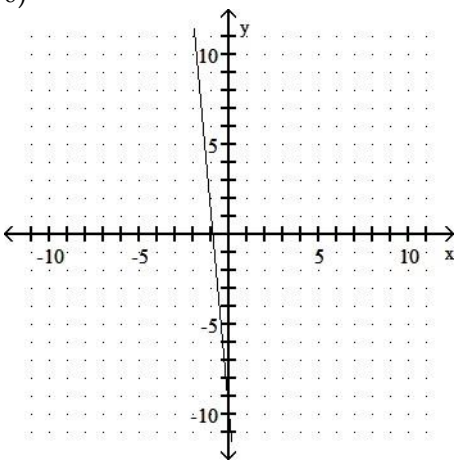
B) $\frac{10}{11}$, 0), (0, 10)



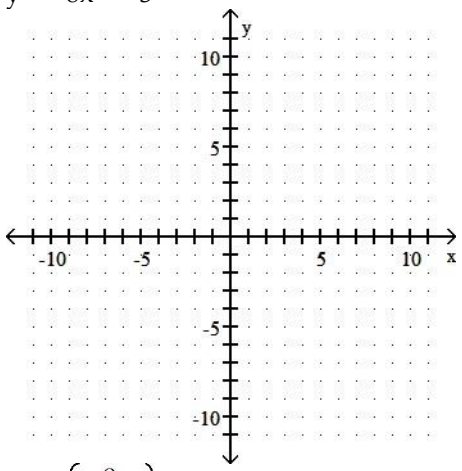
C) $-\frac{10}{11}$, 0), (0, 10)



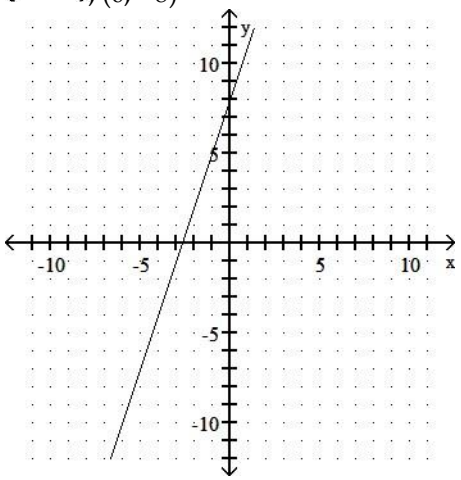
D) $\left(-\frac{10}{11}, 0\right), (0, -10)$



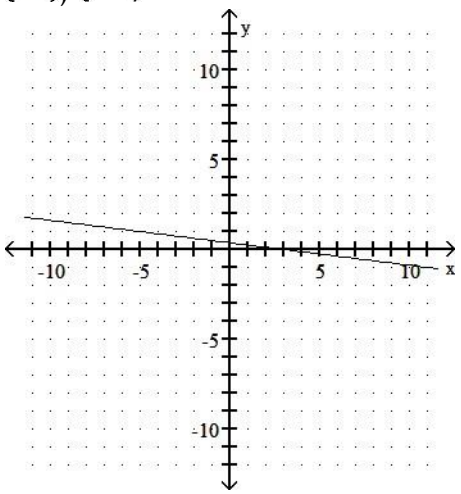
153) $y = 8x + 3$ 153) _____



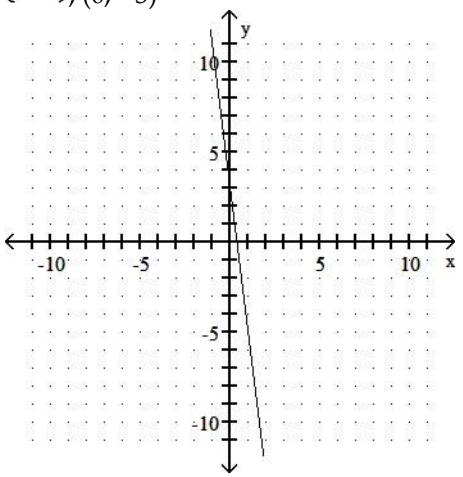
A) $\left(-\frac{8}{3}, 0\right), (0, 8)$



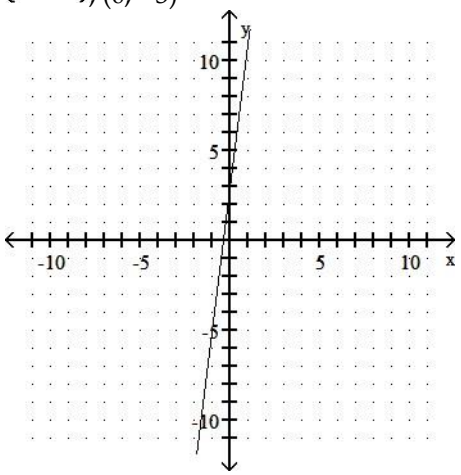
B) $(3, 0), \left(0, \frac{3}{8}\right)$



C) $\left(\frac{3}{8}, 0\right)$, (0, 3)

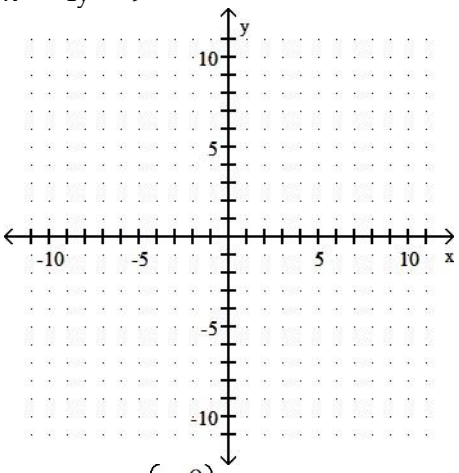


D) $\left(-\frac{3}{8}, 0\right)$, (0, 3)

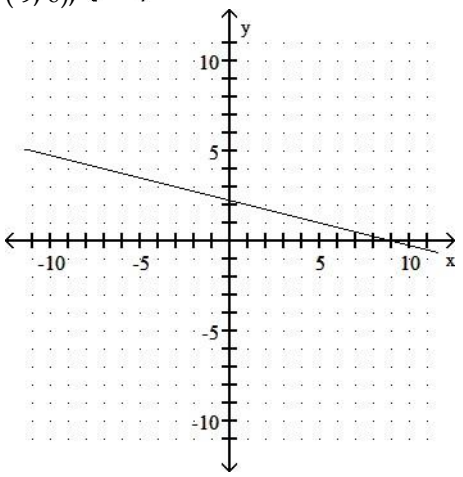


154) x = 4y - 9

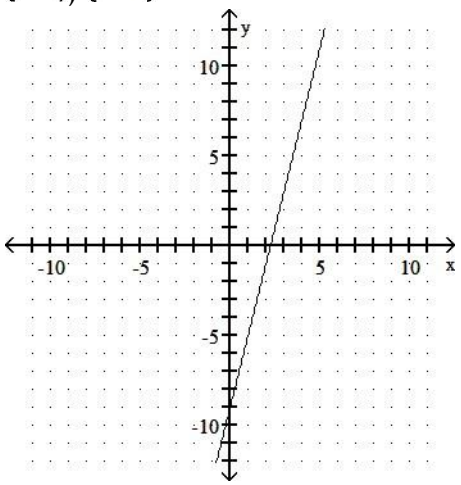
154) _____



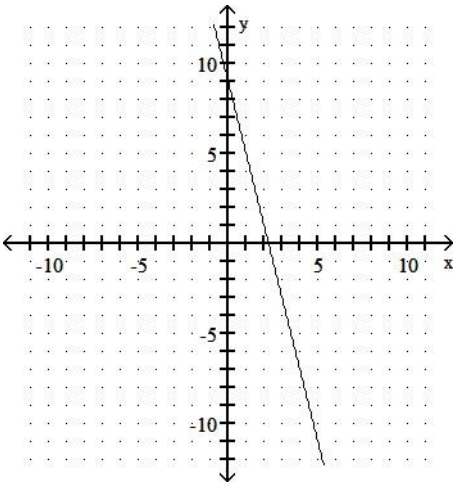
A) (9, 0), $\left(0, \frac{9}{4}\right)$



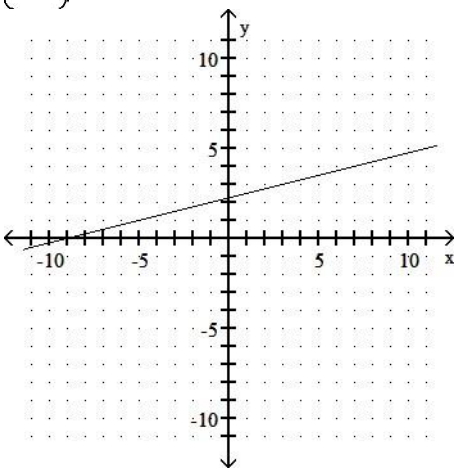
B) $\left(\frac{9}{4}, 0\right)$, (0, −9)



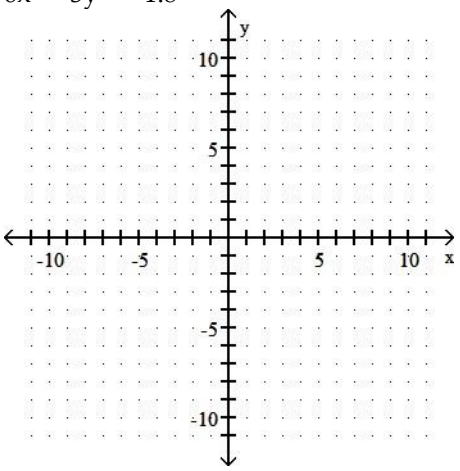
C) $\left(\frac{9}{4}, 0\right)$, (0, 9)



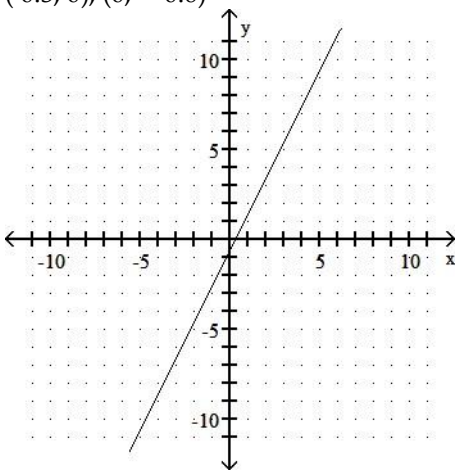
D) (-9, 0), $\left(0, \frac{9}{4}\right)$



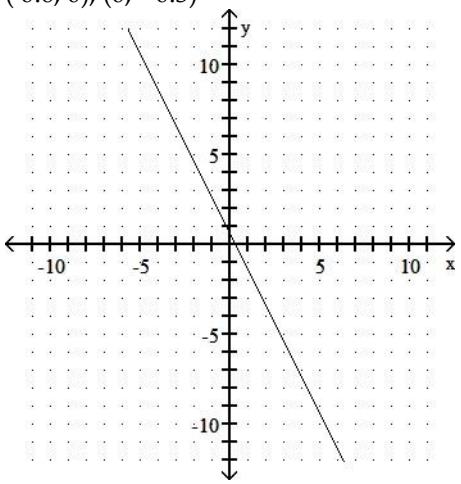
155) 6x - 3y = 1.8 155) _____



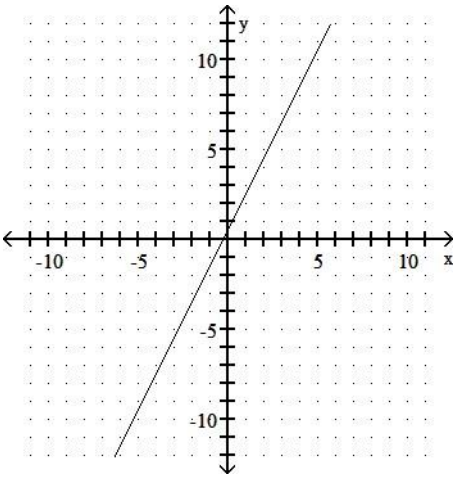
A) (0.3, 0), (0, -0.6)



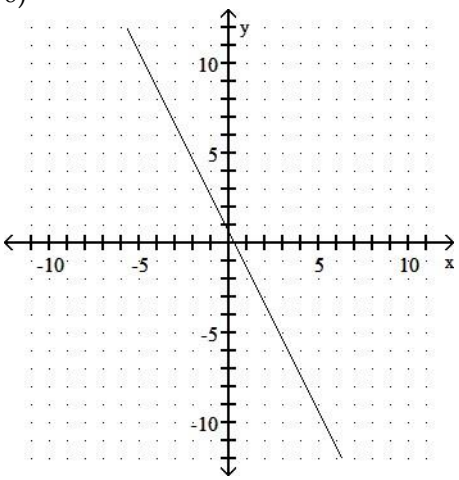
B) (0.6, 0), (0, 0.3)



C) (-0.6, 0), (0, 0.3)

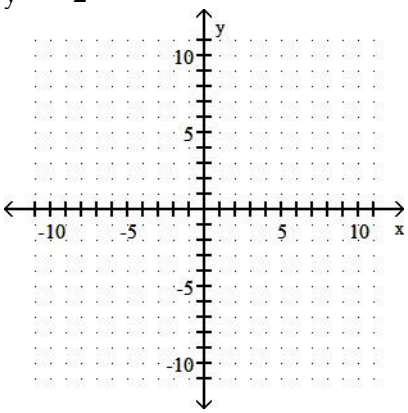


D) (0.3, 0), (0, 0.6)

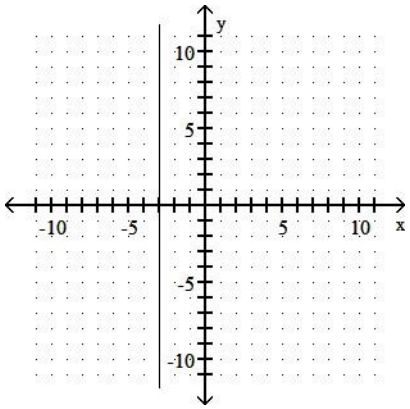


Graph the equation in the rectangular coordinate system.

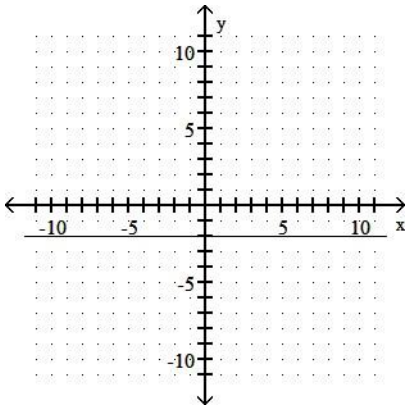
156) y = -2 156) _____



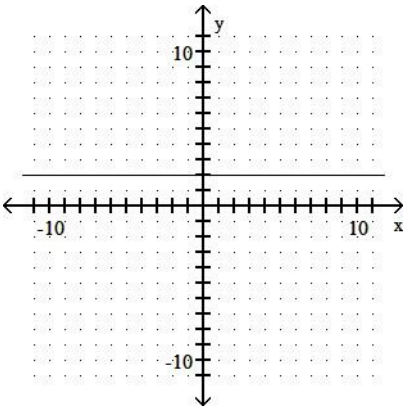
A)



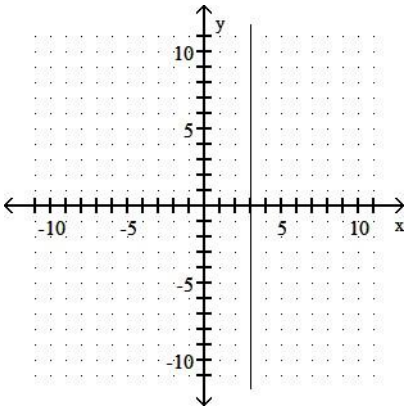
B)



C)

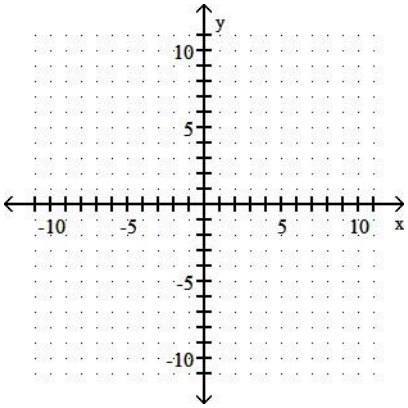


D)

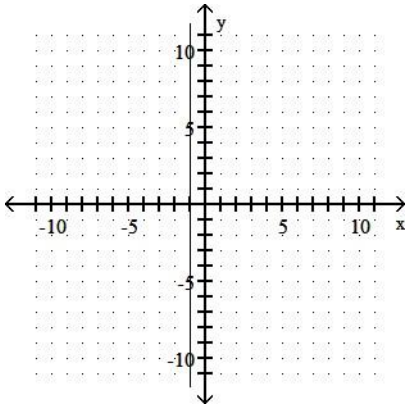


157) x = -1

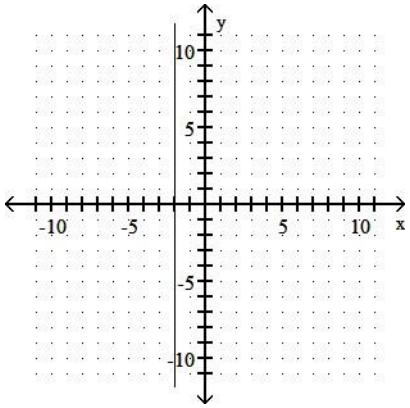
157) _____



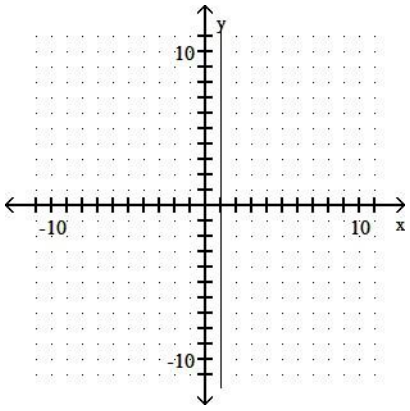
A)



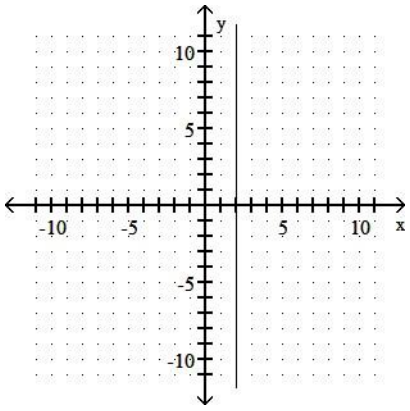
B)



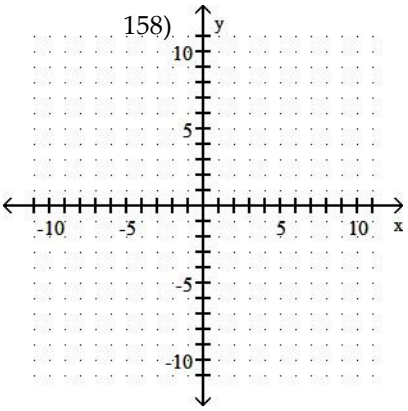
C)



D)



158) y + 5 = 0

158) 

____
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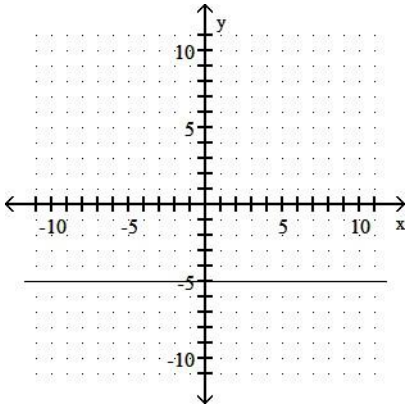
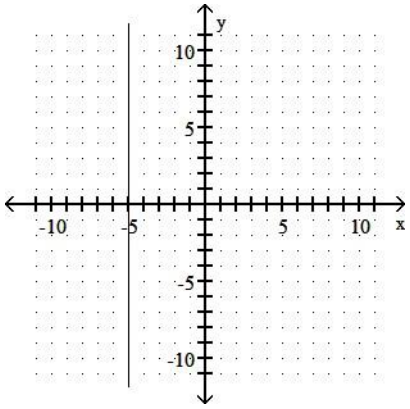
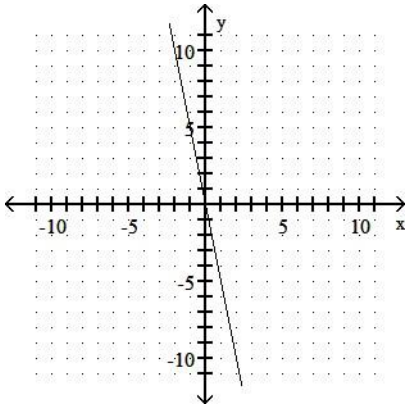
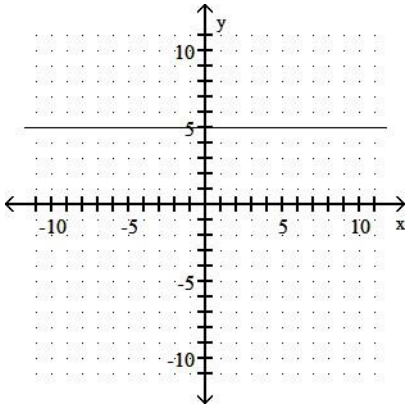
A) 

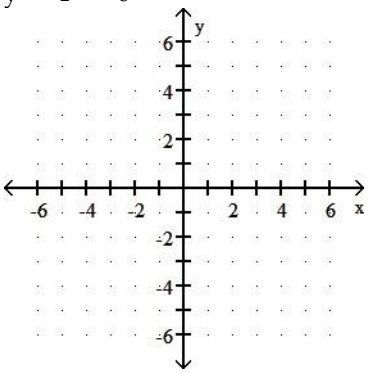
B) 

C) 

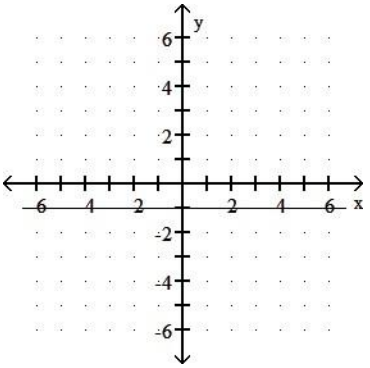
D) 

159) y - 1 = 0

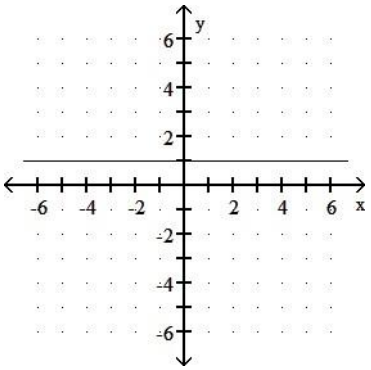
159) _____



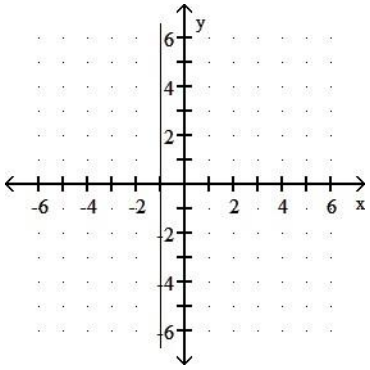
A)



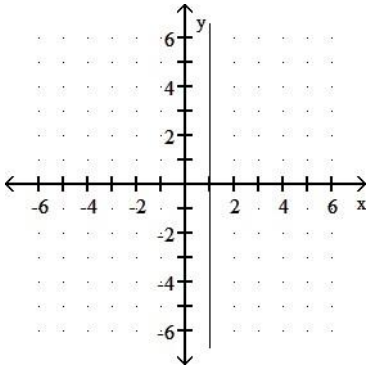
B)



C)

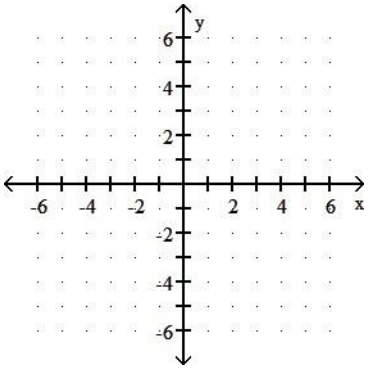


D)

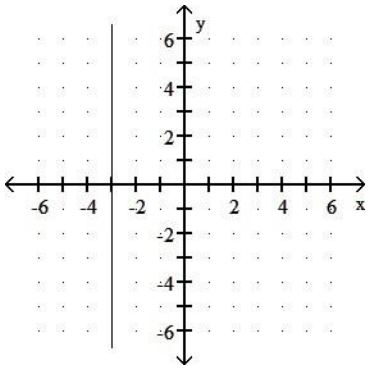


160) 2 - x = 5

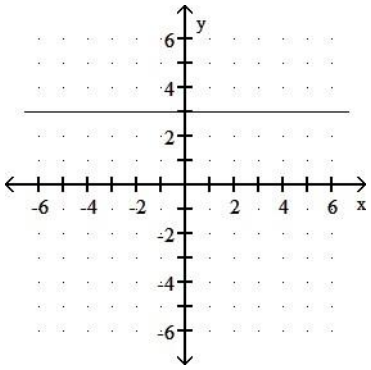
160) _____



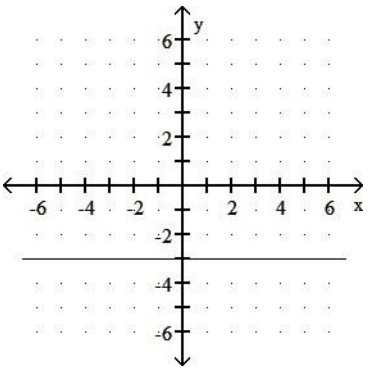
A)



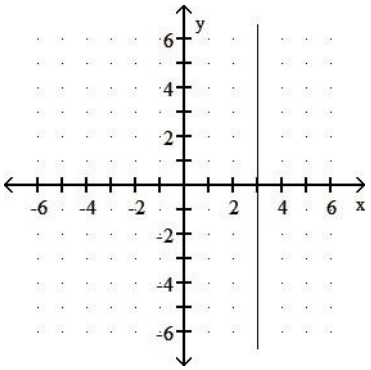
B)



C)

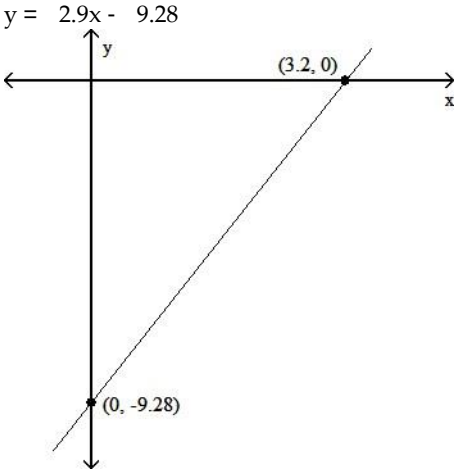


D)



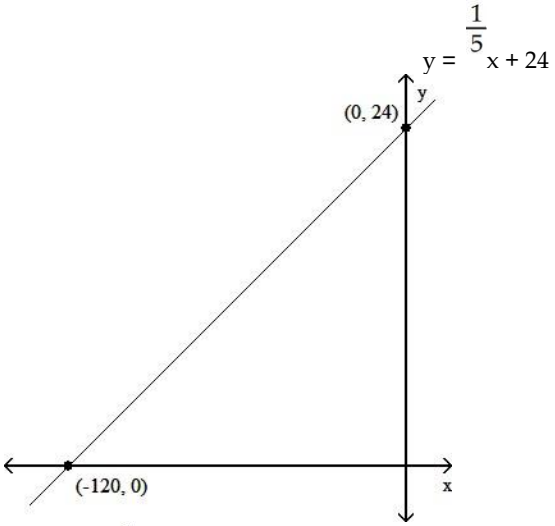
Find the solution to the given equation by reading the accompanying graph.

161) 2.9x - 9.28 = 0 161) _____



A) { -3.2} B) { 2.9} C) { -2.9} D) { 3.2}

162) $\frac{1}{5}$x + 24 = 0 162) _____



A) $\{-\frac{1}{120}\}$ B) { - 120} C) {-24} D) {24}

Use a graphing calculator to estimate the solution of the equation to two decimal places.

163) $5.92x - 425 = 0$ 163) _____

A) $x \approx 0.02$ B) $x \approx 71.85$ C) $x \approx 0.01$ D) $x \approx 71.79$

164) $2.5(1.9x + 7.9) - 9.23(1.7x - 3.27) = 0$ 164) _____

A) $x \approx 2.44$ B) $x \approx 0.42$ C) $x \approx 4.56$ D) $x \approx 2.37$

Solve the problem.

165) 165) _____

The cost, c, in dollars of car rental is $c = 6 + \frac{1}{4}m$, where m is the number of miles driven. Estimate the cost of car rental if the number of miles driven is 35.

A) About 36.5 dollars B) About 20 dollars

C) About 15 dollars D) About 11 dollars

166) 166) _____

The population p, in thousands, of one town can be approximated by $p = 4 + \frac{3}{2}d$ where d is the number of years since 1985. Estimate the population of the town in the year 1993.

A) About 16 B) About 20,000 C) About 16,000 D) About 24,000

167) 167) _____

The value, v, in hundreds of dollars, of Juan's computer is approximated by $v = -\frac{1}{2}t + 8,$ where t is the number of years since he first bought the computer. Estimate the value of the computer 2 years after it was purchased.

A) \$ 900 B) \$ 700 C) \$ 760 D) \$ 600

168) During the month of January 1997, the depth, d, of snow in inches at the base of one ski resort could be approximated by $d = -2t + 66$, where t is the number of days since December 31st. Estimate the depth of snow on January 26th. 168) _____

A) 22 inches B) 19 inches C) 14 inches D) 40 inches

169) 169) _____

The cost, T, in hundreds of dollars, of tuition at one community college is given by $T = 4 + \frac{3}{4}c$, where c is the number of credits for which a student registers. Estimate the cost of tuition if a student registers for 13 credits.

A) About \$ 2300 B) About \$ 1100 C) About \$ 1400 D) About \$ 1900

170) Alison sets aside $\$55$ each month to spend on books and CDs. If she spends c dollars on CDs in a given month, she may spend b dollars on books, where $c + b = 55.$ Estimate the amount Alison may spend on books in March if she spends $\$33$ on CDs. 170) _____

A) \$ 22 B) \$ 33 C) \$ 29 D) \$ 88

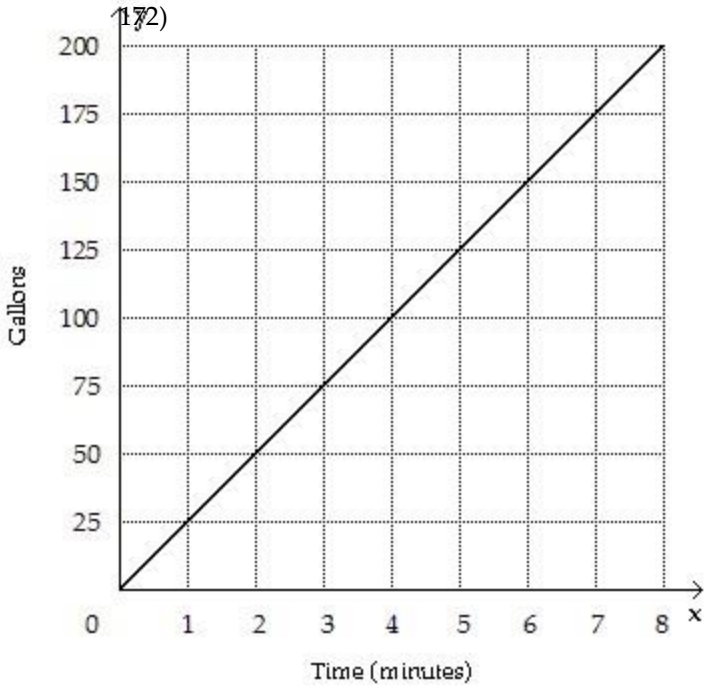
171) In one U.S. town the annual consumption, b, of beef (in kg per person) can be estimated by $b = -\frac{1}{3}t + 24,$ where t is the number of years since 1975. Estimate the beef consumption in the year 1995. 171) _____

A) About 31 kg per person B) About 14 kg per person

C) About 17 kg per person D) About 11 kg per person

172)

172) ____

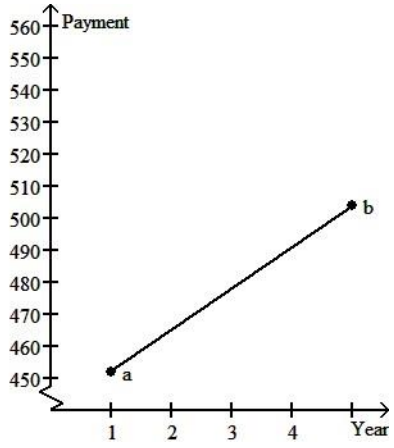


The graph shows the amount of gas in a 250-gallon tank after x minutes have elapsed. (i) Is the gas entering or leaving the tank? (ii) Find the x-intercept and the y-intercept.

A) Entering; x-intercept is 250 and y-intercept is 0
B) Leaving; both intercepts are 0
C) Leaving; x-intercept is 0 and y-intercept is 250
D) Entering; both intercepts are 0

173) The graph shows an idealized linear relationship for the average monthly payments to retirees from 1995 through 1999. Find the midpoint of the line segment to estimate the payment for 1997. Average

Monthly Payments to Retiree 173) ____



1995
1997
1999
a = $452;
b = $504

A) 504 dollars B) 478 dollars C) 500 dollars D) 26 dollars

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

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67) D
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69) C
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71) B
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73) D
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75) C
76) A
77) A
78) B
79) B
80) D
81) C
82) D
83) B
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85) A
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87) B
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93) D
94) B
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97) C
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113) B
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115) B
116) C
117) D
118) D
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120) A
121) A
122) D
123) C
124) D
125) D
126) A
127) C
128) B
129) B
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131) D
132) B
133) A
134) C
135) A
136) D
137) B
138) C
139) C
140) A
141) A
142) A
143) C
144) B
145) B
146) A
147) A
148) C
149) B
150) B
151) A
152) B
153) D
154) D
155) A

156) B
157) A
158) A
159) B
160) A
161) D
162) B
163) D
164) C
165) C
166) C
167) B
168) C
169) C
170) A
171) C
172) D
173) B