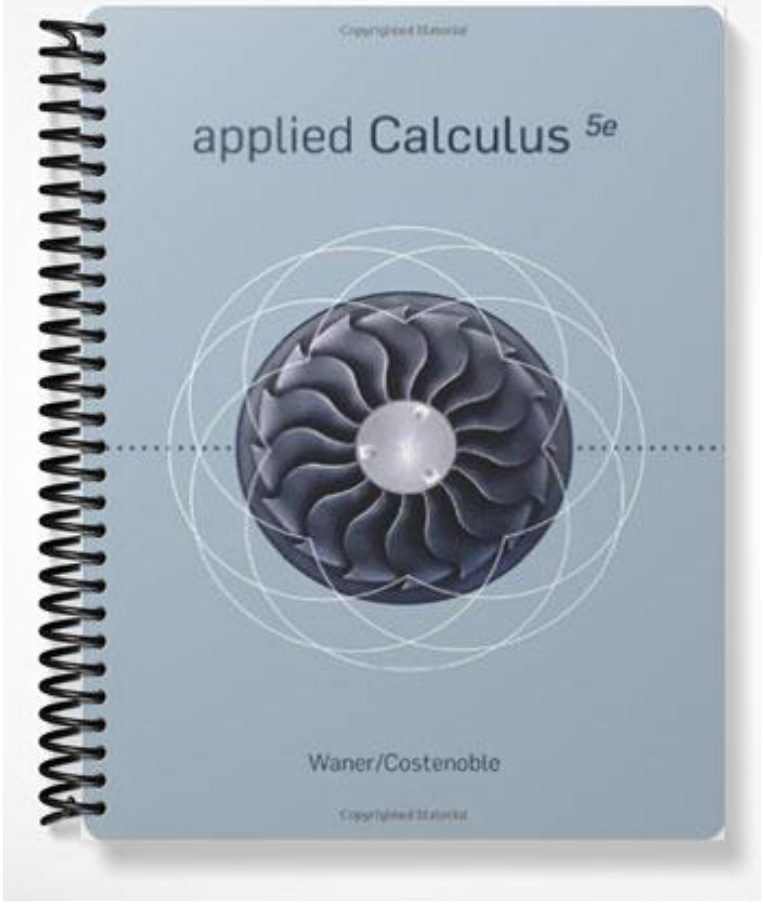
TEST BANK



WC.AppliedCalc5-ch01sec01

Student: _____

1. Based on the following table, find $f(-1)$.

x	-3	-2	-1	0	1	2	3
f(x)	2	8	1	4	0	0.5	2

A. 2
B. 0
C. 4
D. 8
E. 1

2. Based on the following table, find $f(2) - f(-2)$.

f	-3	-2	-1	0	1	2	3
f(x)	5	6	6	–1	4	0.5	1.75

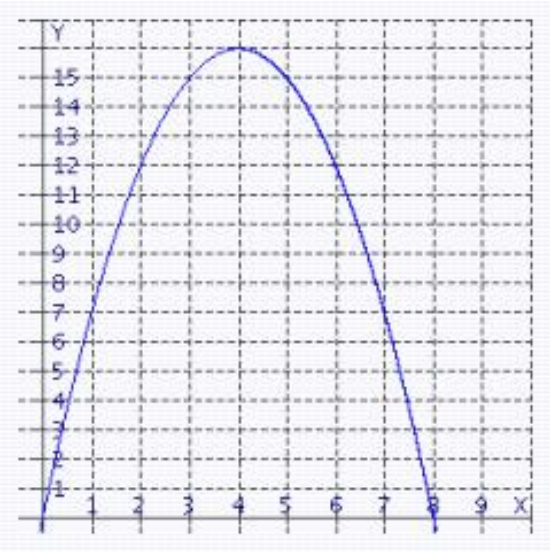
A. 0
B. 6.5
C. 1
D. 12.5
E. -5.5

3. Based on the following table, find $f(0) - f(-2)$.

f	-3	-2	-1	0	1	2	3
f(x)	7	5	2	2	4	1	1.25

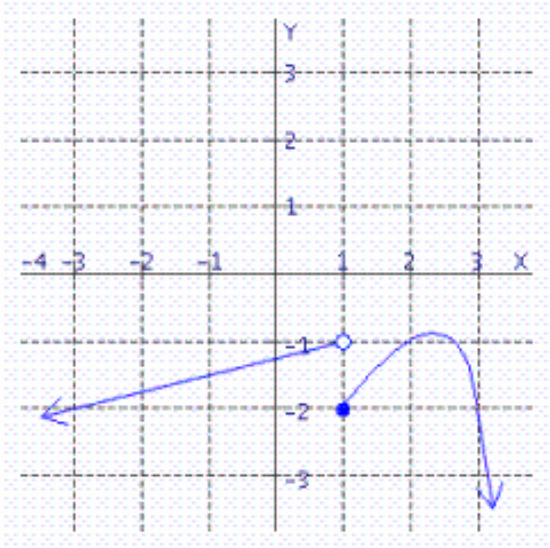
A. 1.3
B. 2.7
C. -3
D. 12
E. 7

4. Use the graph of the function f to find $f(5)$.



A. 14
B. 15
C. 16
D. 13
E. 17

5. Use the graph of the function f to find $f(1)$.



A. -3
B. -4
C. -1
D. -3.5
E. -2

6. Given $f(x) = \sqrt{27 + x^2}$, find $f(-3)$.

A. 36
B. $\sqrt{18}$
C. 18
D. 6
E. -6

7. Given $f(x) = 4x - 5$, find $f(-9)$.

A. -41
B. 31
C. 41
D. -31
E. 9

8. Given $f(x) = -2x + 5$, find $f(a+b)$.

A. $-2(a + b) + 5$
B. $-2b + 5a$
C. $-2a + 5b$
D. $-2(a + b) + 10$
E. $-2(a + b) + 5(a + b)$

9. Given $f(x) = x^2 + 3x + 2$, find $f(-4)$.

A. -26
B. -18
C. 26
D. 6
E. -14

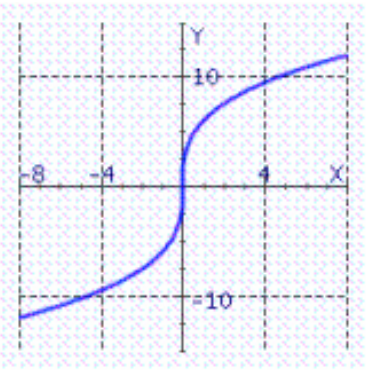
10. Given $g(s) = s^2 + \frac{4}{s}$, find $g(2)$.

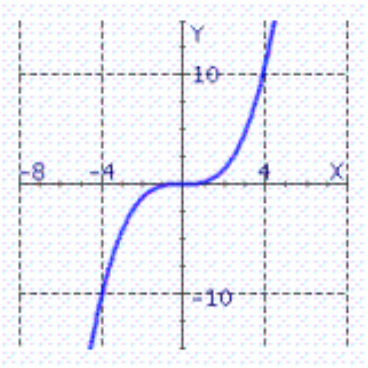
A. 6
B. 4
C. 2
D. 12
E. -2

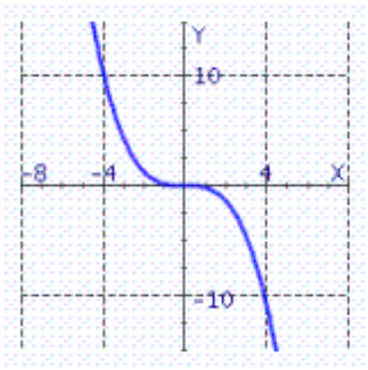
$$f(x) = -\frac{x^3}{6}, \text{ domain } (-\infty, \infty)$$

11. Choose the graph of the function from the following:

A. 

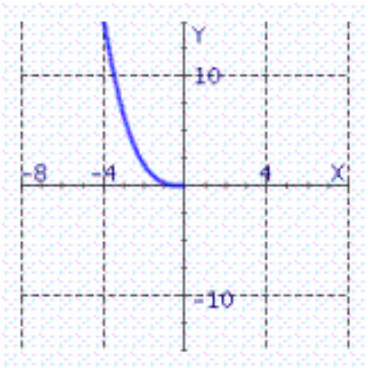
B. 

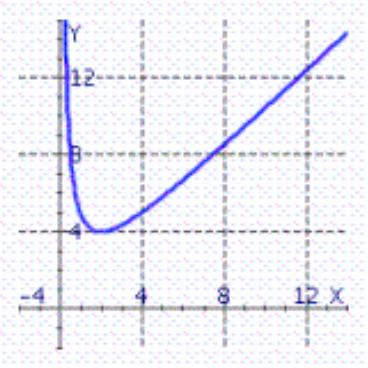
C. 

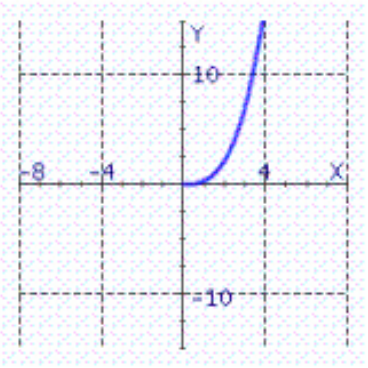
D. 

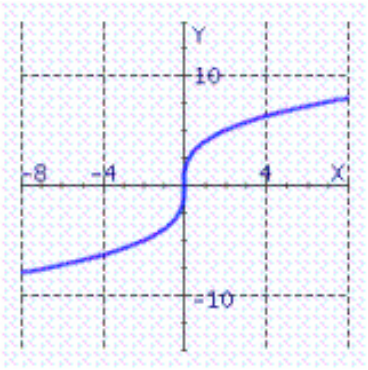
$$f(x) = \frac{x^3}{4}, \text{ domain } [0, \infty)$$

12. Choose the graph of the function from the following:

A. 

B. 

C. 

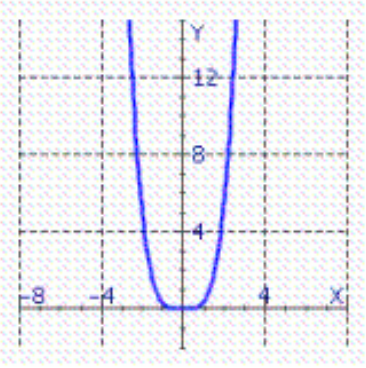
D. 

$$f(x) = \frac{x^4}{3}, \text{ domain } (-\infty, \infty)$$

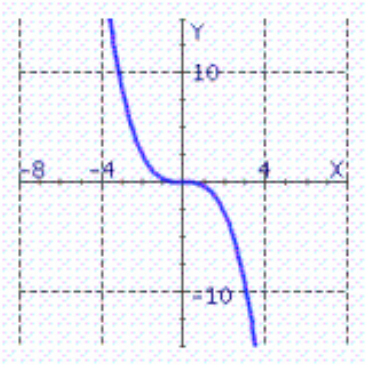
13. Choose the graph of the function from the following:

A.

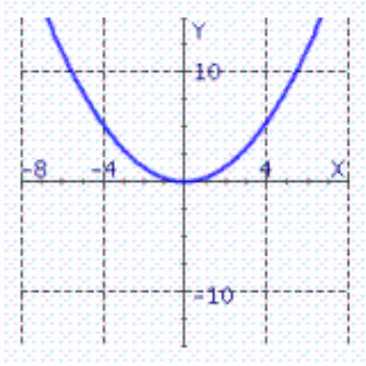
B.



C.



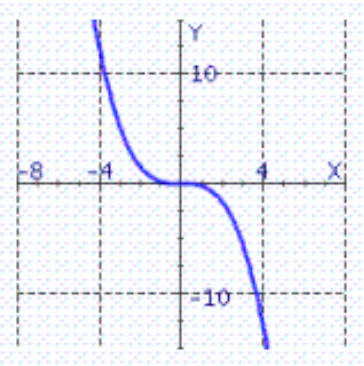
D.



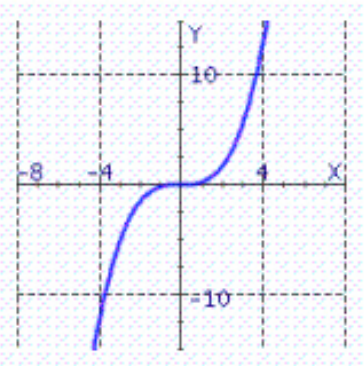
14. Choose the graph of the function $f(x) = 5\sqrt[3]{x}$, domain $(-\infty, \infty)$ from the following:

A.

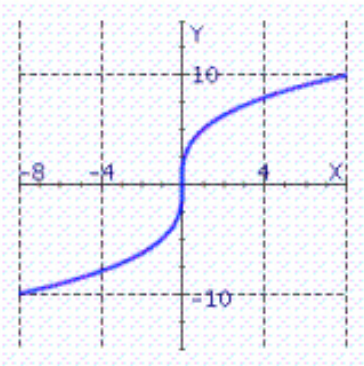
B.



C.



D.



15. Use technology (such as spreadsheet web site utilities, or a graphing calculator) to evaluate the function for $x = 5.8$.

$f(x) = 0.7x^2 - 5x + 4$

A. -1.452
B. -9.452
C. 56.548
D. 48.548
E. -16.88

16. Use technology (such as spreadsheet web site utilities, or a graphing calculator) to evaluate the function for $x = 6.7$.

$$r(x) = \frac{4x^2 - 2}{4x^2 + 2}$$

Round the answer to four decimal places if necessary.

A. 0.978
B. 0.9281
C. 1
D. 28.8
E. 1.0225

17. Function f is $$f(x) = \begin{cases} 4x & \text{if } 0 \le x < 9 \\ 1 & \text{if } 9 \le x < 18 \end{cases}$$.

Find $f(15)$.

A. 64
B. 56
C. 68
D. 1
E. 60

$$f(x) = \begin{cases} -9 & \text{if } 0 \le x < 11 \\ -7x & \text{if } 11 \le x < 22 \end{cases}$$

18. Function f is .

Find $f(11)$.

A. -77
B. -9
C. 9
D. 22
E. -86

$$f(x) = \begin{cases} x^2 & \text{if } -13 < x \le 0 \\ \sqrt{x} & \text{if } 0 < x \le 45 \end{cases}$$

19. Function f is .

Find $f(-10)$.

A. -20
B. 100
C. 101
D. No solution
E. -100

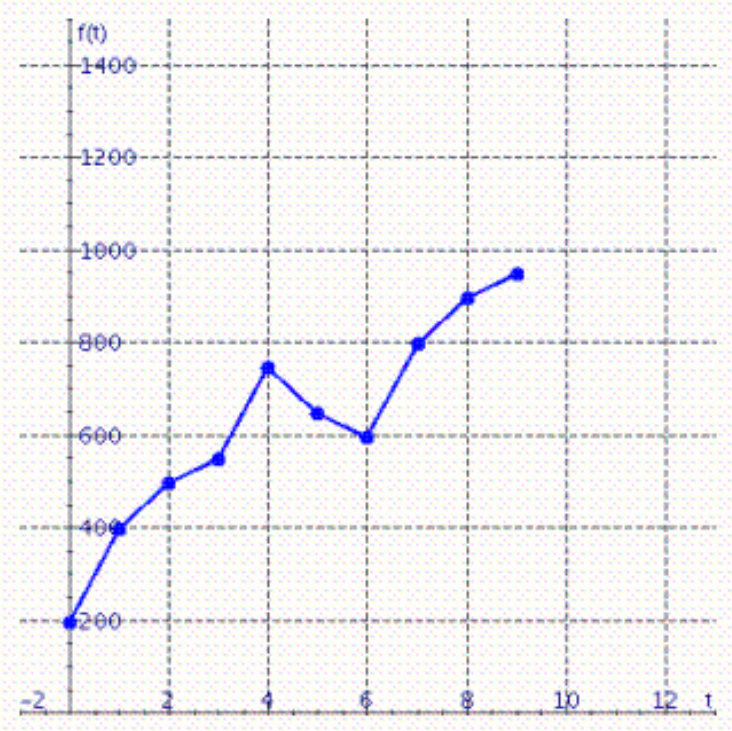
$$f(x) = \begin{cases} 5x & \text{if } 0 < x < 7 \\ x + 1 & \text{if } 7 \le x < 14 \\ 5x & \text{if } 14 \le x \le 21 \end{cases}$$

20. Function f is .

Find $f(5)$.

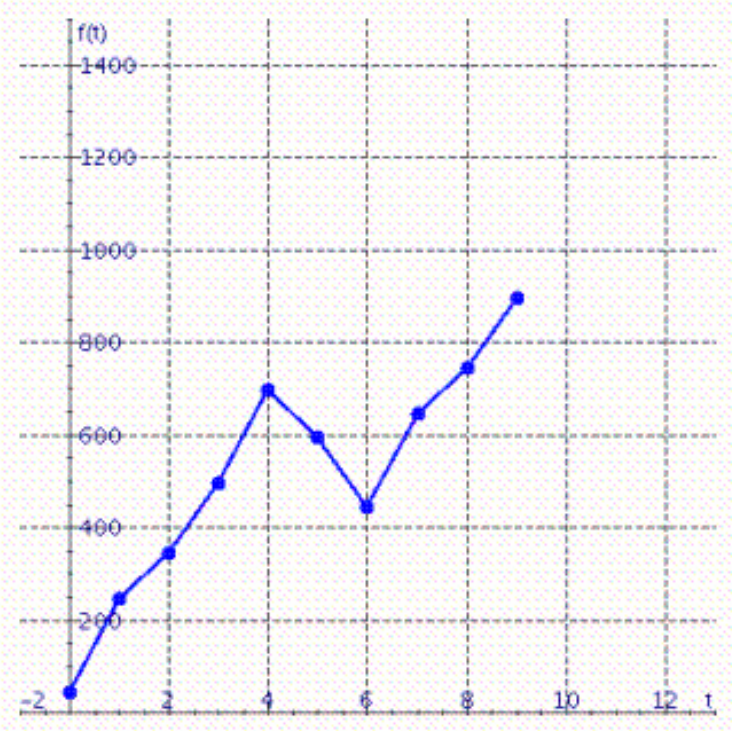
A. 30
B. 5
C. 32
D. 25
E. 7

21. Graph shows the number of sports utility vehicles $f(t)$ sold in the United States. $f(t)$ represents sales in year t in thousands of vehicles. Find $f(10)$.



A. 1250
B. 1150
C. 600
D. 750
E. 400

22. Graph shows the number of sports utility vehicles $f(t)$ sold in the United States. $f(t)$ represents sales in year t in thousands of vehicles. Find $f(4)$.



A. 600
B. 700
C. 900
D. 450
E. 500

23. The value of U.S. trade with China from 1994 through 2001 can be approximated by $C(t) = 3t^2 - 7t + 50$ billion dollars (t is time in years since 1994).

Find an appropriate domain of C.

A. $[0, +\infty]$
B. $[0, 7]$
C. $[7, +\infty]$
D. $[1994, +\infty]$
E. $[1994, 2001]$

24. The number of research articles in *Physics Review* that were written by researchers in the U.S. from 1983 through 2003 can be approximated by $A(t) = -0.01t^2 + 0.24t + 3.4$ billion dollars (t is time in years since 1983).

Find an appropriate domain of A.

A. $[0, 20]$
B. $[1983, +\infty]$
C. $[-\infty, 20]$
D. $[1983, 2003]$
E. $[-\infty, 0]$

25. The processor speed, in megahertz, of Intel processors could be approximated by the function of time t in years since the start of 1995.

$$P(t) = \begin{cases} 75t + 200 & \text{if } 0 \le t \le 4 \\ 600t - 1{,}900 & \text{if } 4 < t \le 9 \end{cases}$$

Use the model to estimate when processor speeds first hit 3.2 gigahertz (1 gigahertz = 1,000 megahertz).

A. $t = 8.8$
B. $t = 9.0$
C. $t = 8.5$
D. $t = 8.2$
E. $t = 6.5$

26. The value of the Conference Board Index of 10 economic indicators in the U.S. could be approximated by the function of time t in months since the end of December 2002.

$$E(t) = \begin{cases} 0.4t + 110 & \text{if } 6 \le t \le 15 \\ -0.2t + 119 & \text{if } 15 < t \le 20 \end{cases}$$

Use the model to estimate when - prior to March, 2004 - the index was 113.

A. $t = 7.5$ months
B. $t = 7.4$ months
C. $t = 7.0$ months
D. $t = 7.8$ months
E. $t = 6.5$ months

27. The percentage $p(t)$ of children who are able to speak in at least single words by the age of t months can be approximated by the equation.

$$p(t) = 100\left(1 - \frac{12354}{t^{4.231}}\right)$$

What percent of children are able to speak in at least single words by the age of 11 months? Round to the nearest percent.

A. 45%
B. 52%
C. 48%
D. 27%
E. 39%

28. The percentage $p(t)$ of children who are able to speak in at least single words by the age of t months can be approximated by the equation.

$$p(t) = 100\left(1 - \frac{12256}{t^{4.901}}\right)$$

By what age are 60% of children speaking in at least single words? Round your answer to the nearest month.

A. 6
B. 8
C. 4
D. 5
E. 13

29. If the income I is specified as a function of time t, which variable is independent?

A. t
B. I

30. Write the equation $y = 2x^2 - 2$ using function notation.

A. $2x^2 - 2 - y = 0$
B. $y = 2x^2 - 2$
C. $y(x) = 2x^2 - 2$
D. $f(2x^2 - 2)$
E. $2x^2 - 2 = 0$

31. Based on the following table, find $f(1)$.

f	-3	-2	-1	0	1	2	3
f(x)	1	4	1	4	2	1.5	0.35

_____

32. Given $f(x) = \sqrt{32 + x^2}$, find $f(2)$.

_____

33. Given $f(x) = 3x - 2$, find $f(6)$.

_____

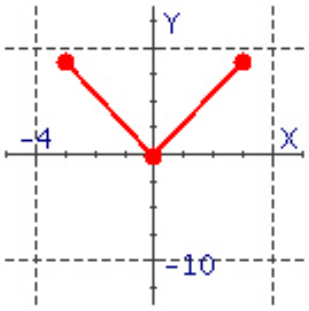
34. Given $f(x) = x^2 + 3x + 5$, find $f(-1)$.

_____

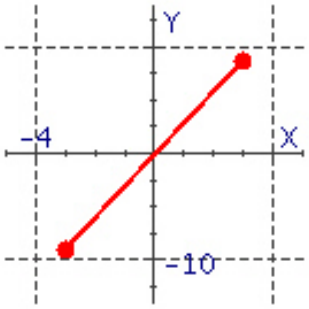
35. Given $g(s) = s^2 + \frac{4}{s}$, find $g(-2)$.

_____

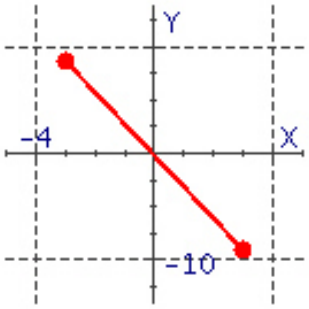
36. *Match each function with the corresponding graph.*

1. 

$f(x) = 3x, (-3 \le x \le 3)$ ____

2. 

$f(x) = -3x, (-3 \le x \le 3)$ ____

3. 

$f(x) = |3x|, (-3 \le x \le 3)$ ____

37. If the income I is specified as a function of selling price s, which variable is independent and which one is dependent?

Choose the correct letter for each question.

1. independent variable s ____
2. dependent variable I ____

38. Given $f(x) = -3x + 7$, find $f(a+b)$.

WC.AppliedCalc5-ch01sec01 Key

1. Based on the following table, find $f(-1)$.

x	-3	-2	-1	0	1	2	3
f(x)	2	8	1	4	0	0.5	2

A. 2
B. 0
C. 4
D. 8
E. 1

2. Based on the following table, find $f(2) - f(-2)$.

f	-3	-2	-1	0	1	2	3
f(x)	5	6	6	–1	4	0.5	1.75

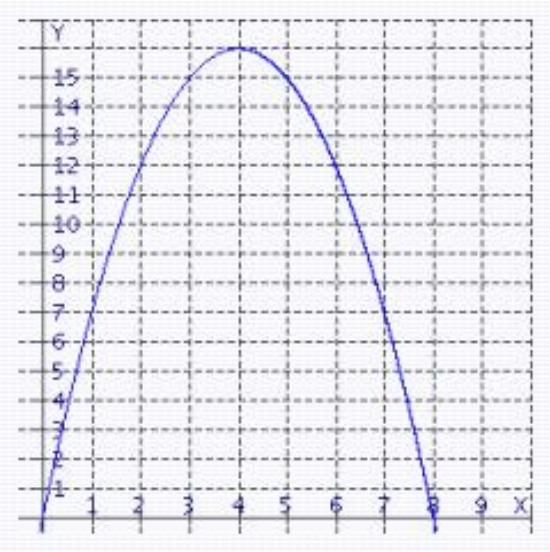
A. 0
B. 6.5
C. 1
D. 12.5
E. -5.5

3. Based on the following table, find $f(0) - f(-2)$.

f	-3	-2	-1	0	1	2	3
f(x)	7	5	2	2	4	1	1.25

A. 1.3
B. 2.7
C. -3
D. 12
E. 7

4. Use the graph of the function f to find $f(5)$.



A. 14
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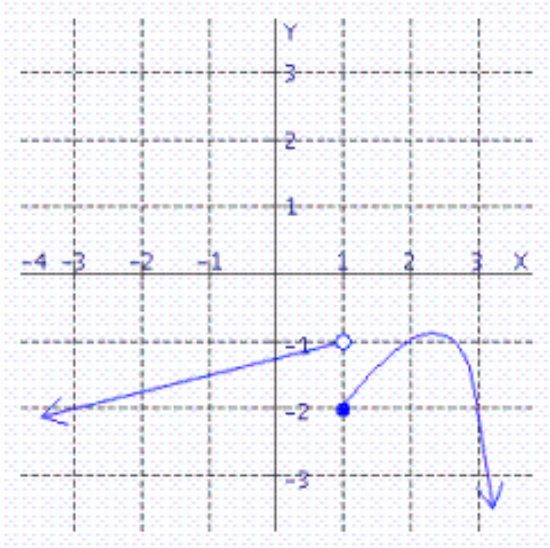

A. -3
B. -4
C. -1
D. -3.5
E. -2

6. Given $f(x) = \sqrt{27 + x^2}$, find $f(-3)$.

A. 36
B. $\sqrt{18}$
C. 18
D. 6
E. -6

7. Given $f(x) = 4x - 5$, find $f(-9)$.

A. -41
B. 31
C. 41
D. -31
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8. Given $f(x) = -2x + 5$, find $f(a+b)$.

A. $-2(a + b) + 5$
B. $-2b + 5a$
C. $-2a + 5b$
D. $-2(a + b) + 10$
E. $-2(a + b) + 5(a + b)$

9. Given $f(x) = x^2 + 3x + 2$, find $f(-4)$.

A. -26
B. -18
C. 26
D. 6
E. -14

10. Given $g(s) = s^2 + \frac{4}{s}$, find $g(2)$.

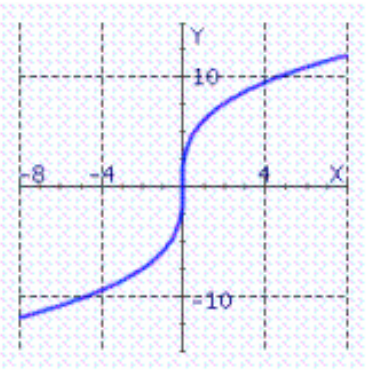
A. 6
B. 4
C. 2
D. 12
E. -2

$$f(x) = -\frac{x^3}{6}, \text{ domain } (-\infty, \infty)$$

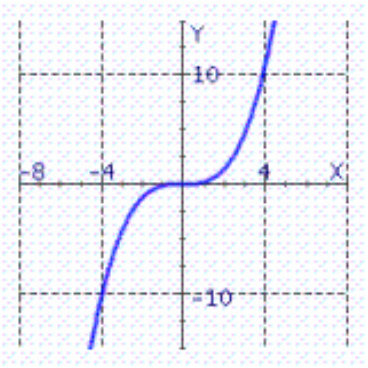
11. Choose the graph of the function from the following:

A.

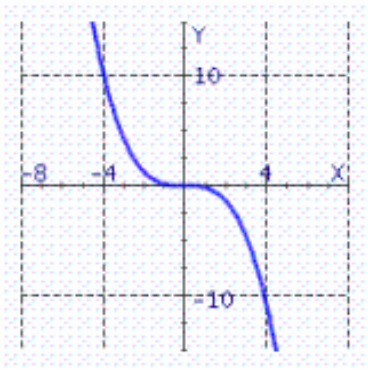
B.



C.

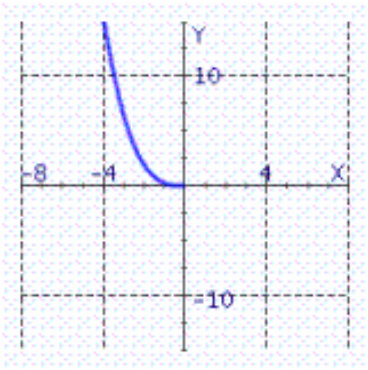


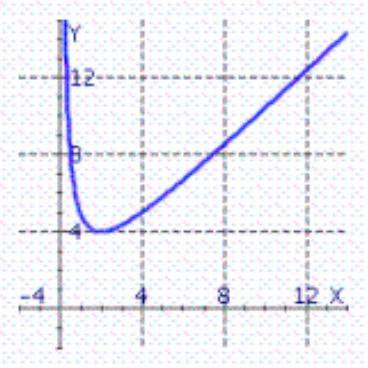
D.

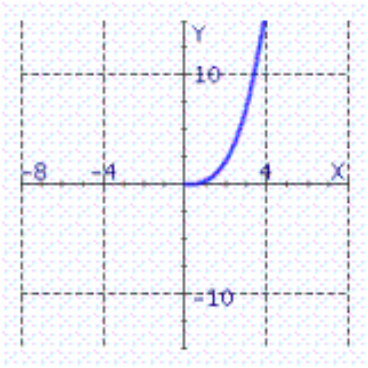


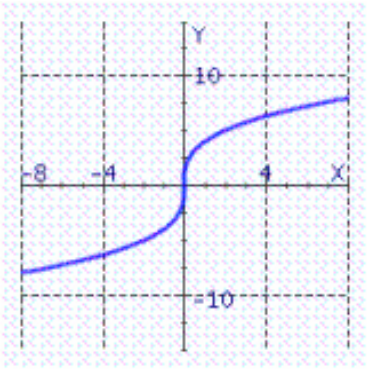
$$f(x) = \frac{x^3}{4}, \text{ domain } [0, \infty)$$

12. Choose the graph of the function from the following:

A. 

B. 

C. 

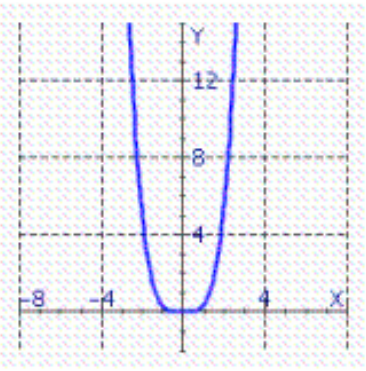
D. 

$$f(x) = \frac{x^4}{3}, \text{ domain } (-\infty, \infty)$$

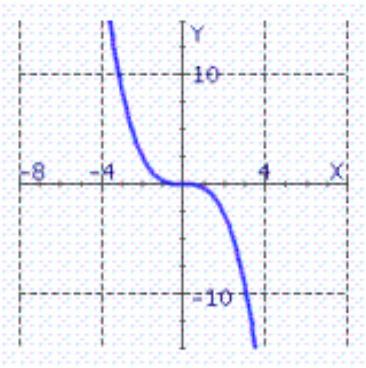
13. Choose the graph of the function from the following:

A.

B.



C.



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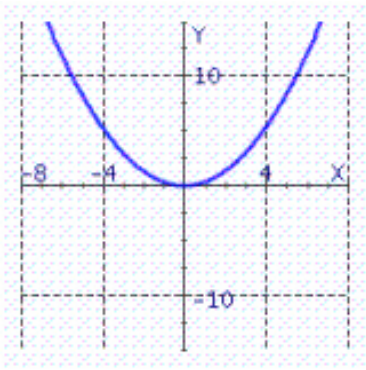
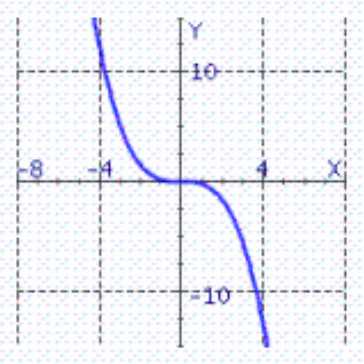


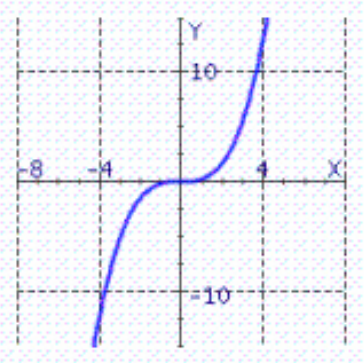
14. Choose the graph of the function $f(x) = 5\sqrt[3]{x}$, domain $(-\infty, \infty)$ from the following:

A.

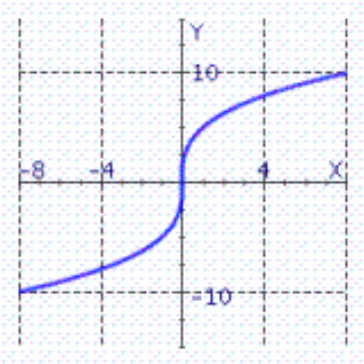
B.



C.



D.



15. Use technology (such as spreadsheet web site utilities, or a graphing calculator) to evaluate the function for $x = 5.8$.

$f(x) = 0.7x^2 - 5x + 4$

A. -1.452
B. -9.452
C. 56.548
D. 48.548
E. -16.88

16. Use technology (such as spreadsheet web site utilities, or a graphing calculator) to evaluate the function for $x = 6.7$.

$$r(x) = \frac{4x^2 - 2}{4x^2 + 2}$$

Round the answer to four decimal places if necessary.

A. 0.978
B. 0.9281
C. 1
D. 28.8
E. 1.0225

17. Function f is $$f(x) = \begin{cases} 4x & \text{if } 0 \le x < 9 \\ 1 & \text{if } 9 \le x < 18 \end{cases}$$.

Find $f(15)$.

A. 64
B. 56
C. 68
D. 1
E. 60

$$f(x) = \begin{cases} -9 & \text{if } 0 \le x < 11 \\ -7x & \text{if } 11 \le x < 22 \end{cases}$$

18. Function f is .

Find $f(11)$.

A. -77
B. -9
C. 9
D. 22
E. -86

$$f(x) = \begin{cases} x^2 & \text{if } -13 < x \le 0 \\ \sqrt{x} & \text{if } 0 < x \le 45 \end{cases}$$

19. Function f is .

Find $f(-10)$.

A. -20
B. 100
C. 101
D. No solution
E. -100

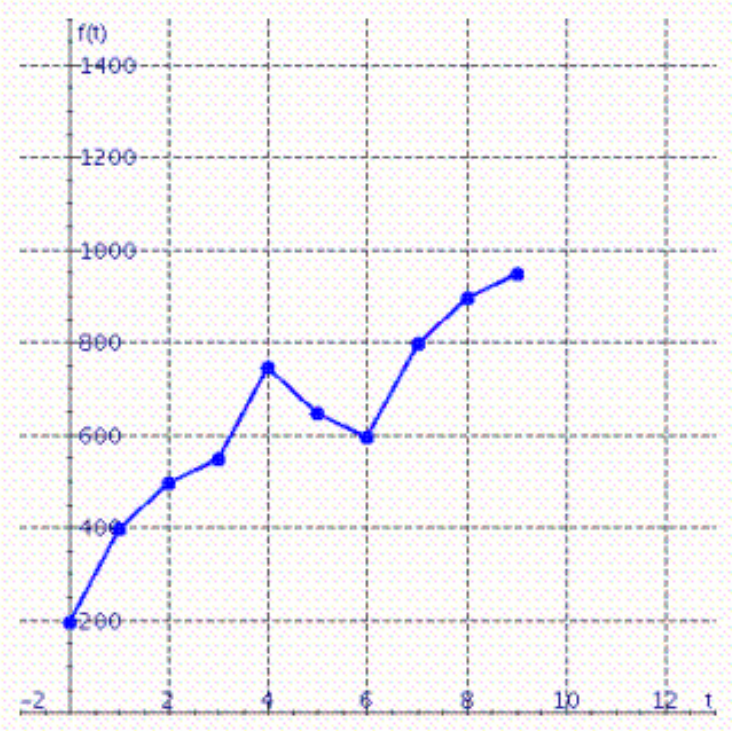
$$f(x) = \begin{cases} 5x & \text{if } 0 < x < 7 \\ x + 1 & \text{if } 7 \le x < 14 \\ 5x & \text{if } 14 \le x \le 21 \end{cases}$$

20. Function f is .

Find $f(5)$.

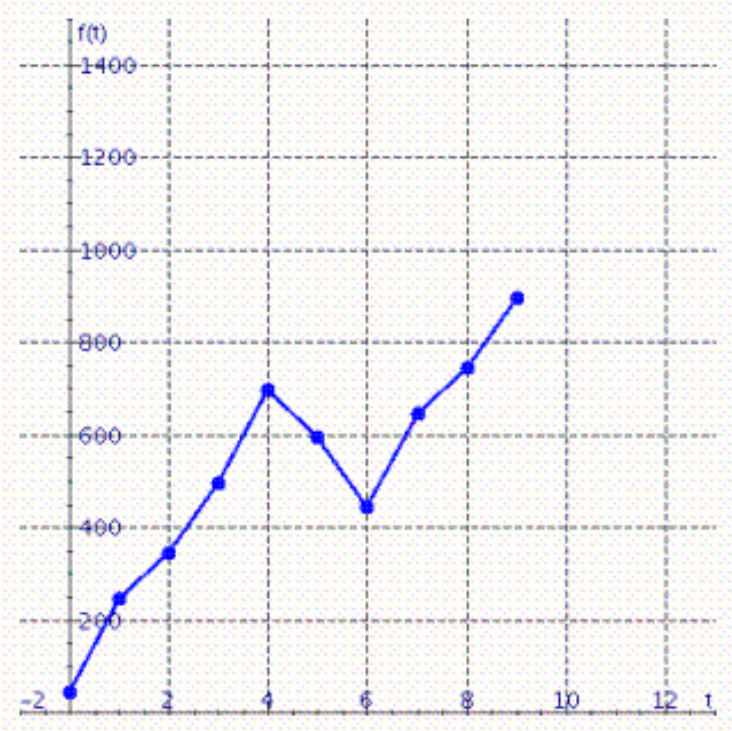
A. 30
B. 5
C. 32
D. 25
E. 7

21. Graph shows the number of sports utility vehicles $f(t)$ sold in the United States. $f(t)$ represents sales in year t in thousands of vehicles. Find $f(10)$.



A. 1250
B. 1150
C. 600
D. 750
E. 400

22. Graph shows the number of sports utility vehicles $f(t)$ sold in the United States. $f(t)$ represents sales in year t in thousands of vehicles. Find $f(4)$.



A. 600
B. 700
C. 900
D. 450
E. 500

23. The value of U.S. trade with China from 1994 through 2001 can be approximated by $C(t) = 3t^2 - 7t + 50$ billion dollars (t is time in years since 1994).

Find an appropriate domain of C.

A. $[0, +\infty]$
B. $[0, 7]$
C. $[7, +\infty]$
D. $[1994, +\infty]$
E. $[1994, 2001]$

24. The number of research articles in *Physics Review* that were written by researchers in the U.S. from 1983 through 2003 can be approximated by $A(t) = -0.01t^2 + 0.24t + 3.4$ billion dollars (t is time in years since 1983).

Find an appropriate domain of A.

A. $[0, 20]$

B. $[1983, +\infty]$

C. $[-\infty, 20]$

D. $[1983, 2003]$

E. $[-\infty, 0]$

25. The processor speed, in megahertz, of Intel processors could be approximated by the function of time t in years since the start of 1995.

$$P(t) = \begin{cases} 75t + 200 & \text{if } 0 \le t \le 4 \\ 600t - 1{,}900 & \text{if } 4 < t \le 9 \end{cases}$$

Use the model to estimate when processor speeds first hit 3.2 gigahertz (1 gigahertz = 1,000 megahertz).

A. $t = 8.8$

B. $t = 9.0$

C. $t = 8.5$

D. $t = 8.2$

E. $t = 6.5$

26. The value of the Conference Board Index of 10 economic indicators in the U.S. could be approximated by the function of time t in months since the end of December 2002.

$$E(t) = \begin{cases} 0.4t + 110 & \text{if } 6 \le t \le 15 \\ -0.2t + 119 & \text{if } 15 < t \le 20 \end{cases}$$

Use the model to estimate when - prior to March, 2004 - the index was 113.

A. $t = 7.5$ months
B. $t = 7.4$ months
C. $t = 7.0$ months
D. $t = 7.8$ months
E. $t = 6.5$ months

27. The percentage $p(t)$ of children who are able to speak in at least single words by the age of t months can be approximated by the equation.

$$p(t) = 100\left(1 - \frac{12354}{t^{4.231}}\right)$$

What percent of children are able to speak in at least single words by the age of 11 months? Round to the nearest percent.

A. 45%
B. 52%
C. 48%
D. 27%
E. 39%

28. The percentage $p(t)$ of children who are able to speak in at least single words by the age of t months can be approximated by the equation.

$$p(t) = 100\left(1 - \frac{12256}{t^{4.901}}\right)$$

By what age are 60% of children speaking in at least single words? Round your answer to the nearest month.

A. 6
B. 8
C. 4
D. 5
E. 13

29. If the income I is specified as a function of time t, which variable is independent?

A. t
B. I

30. Write the equation $y = 2x^2 - 2$ using function notation.

A. $2x^2 - 2 - y = 0$
B. $y = 2x^2 - 2$
C. $y(x) = 2x^2 - 2$
D. $f(2x^2 - 2)$
E. $2x^2 - 2 = 0$

31. Based on the following table, find $f(1)$.

f	-3	-2	-1	0	1	2	3
f(x)	1	4	1	4	2	1.5	0.35

2

32. Given $f(x) = \sqrt{32 + x^2}$, find $f(2)$.

6

33. Given $f(x) = 3x - 2$, find $f(6)$.

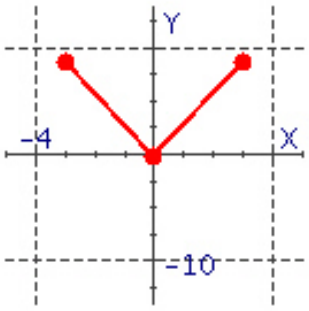
16

34. Given $f(x) = x^2 + 3x + 5$, find $f(-1)$.

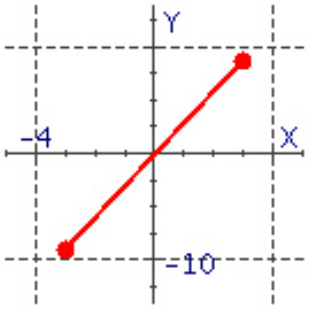
3

35. Given $g(s) = s^2 + \frac{4}{s}$, find $g(-2)$.

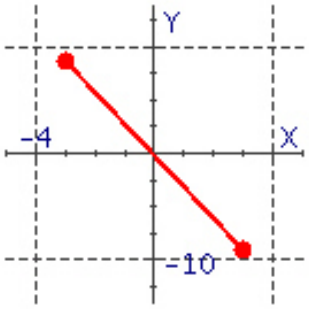
36. *Match each function with the corresponding graph.*

1. 

$f(x) = 3x, (-3 \le x \le 3)$ **2**

2. 

$f(x) = -3x, (-3 \le x \le 3)$ **3**

3. 

$f(x) = |3x|, (-3 \le x \le 3)$ **1**

37. If the income I is specified as a function of selling price s, which variable is independent and which one is dependent?

Choose the correct letter for each question.

1. independent variable s **1**
2. dependent variable I **2**

38. Given $f(x) = -3x + 7$, find $f(a+b)$.

$-3(a+b)+7$