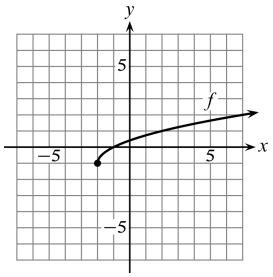
Name _____

Rockswold *College Algebra*
Chapter 1 Test–Form A

1. Let a function f be represented symbolically by $f(x) = 7 - x^2$. Find $f(-3)$. 1. _____

   (A) 16 (B) 13
   (C) 1 (D) −2

2. Use the graph of f to determine its domain. 2. _____



   (A) $\{x \mid x \geq -1\}$
   (B) $\{x \mid -1 \leq x < 2\}$
   (C) $\{x \mid x \geq -2\}$
   (D) All real numbers

3. Lake Buchanan, one of the Highland lakes located in central Texas, covers 1.12×10^8 square feet and contains a total volume of 4.10×10^9 cubic feet of water. Find the average depth of Lake Buchanan. 3. _____

   (A) 3.66 feet (B) 366 feet
   (C) 3.66×10^{-1} feet (D) 36.6 feet

4. If possible, find the slope of the line passing through $(-2.8, 6.3)$ and $(-4.3, 1.5)$. 4. _____

   (A) 0.3125 (B) −3.2
   (C) undefined (D) 3.2

5. Determine which set of ordered pairs does **not** represent a function. 5. _____

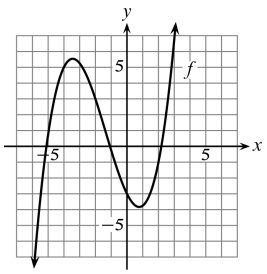
   (A) $\{(1,1), (0,2), (1,3), (0,2)\}$ (B) $\{(1, 1), (2, 2), (3, 3), (4, 2)\}$
   (C) $\{(1, 4), (2, 3), (3, 1), (4, 1)\}$ (D) $\{(1, 1), (2, 0), (3, 1), (4, 0)\}$

6. The table displays the monthly rainfall for Hilo, Hawaii, for the first six months in a typical year. Find the mean rainfall to the nearest tenth of an inch for these six months. 6. _____

Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Rainfall (inches)	26.1	19.0	10.8	7.4	15.0	7.2

   (A) 12.9 in. (B) 14.3 in.
   (C) 18.7 in. (D) 85.5 in.

7. Use the graph of f to evaluate $f(2)$. 7. _____



(A) −1
(B) 2.5
(C) 3
(D) −4.8

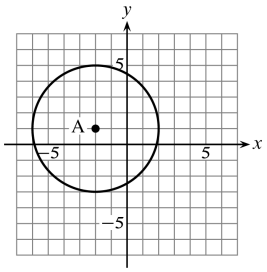
8. Find the domain of $f(x)=\dfrac{1}{\sqrt{x+3}}$. 8. _____

(A) $\{x \mid x=-3\}$ (B) $\{x \mid x \le -3\}$
(C) $\{x \mid x > -3\}$ (D) $\{x \mid x \ne -3\}$

9. Find the midpoint of the line segment joining the points $(5.3, -6.1)$ and $(-2.8,\ 1.1)$. 9. _____

(A) $(1.25, -2.5)$ (B) $(4.05, -3.6)$
(C) $(-0.4, -0.85)$ (D) $(5.7, -195)$

10. Find the equation of the circle. 10. _____



(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) $(x-2)^2+(y+1)^2=16$

11. Find the distance between the points $(12.1, 13.5)$ and $(-5.6, -10.1)$ to the nearest tenth. 11. _____

(A) 53.8 (B) 29.5
(C) 41.3 (D) 9.9

12. Find the domain and range of the relation 12. _____

$$S=\{(-5.2,\ 1.6),\ (3.5, -2.9),\ (-4.9,\ 3.2),\ (6.5, -1.0),\ (-2.1,\ 6.1)\}.$$

(A) D = $\{-5.2,\ 1.6,\ 3.5, -2.9, -4.9\}$
R = $\{3.2,\ 6.5, -1.0, -2.1,\ 6.1\}$

(B) D = $\{1.6, -2.9,\ 3.2, -1.0,\ 6.1\}$
R = $\{-5.2,\ 3.5, -4.9,\ 6.5, -2.1\}$

(C) D = $\{-1.5, -6.0,\ 1.2,\ 9.4,\ 1.7\}$
R = $\{4.9, -1.4, -6.2,\ 1.2,\ 4.1\}$

(D) D = $\{-5.2,\ 3.5,\ -4.9,\ 6.5, -2.1\}$
R = $\{1.6, -2.9,\ 3.2, -1.0,\ 6.1\}$

13. In 1980 the population of Juneau, Alaska was 19,528 and in 2000 it was 30,711. Use the midpoint formula to estimate Juneau's population in 1990. 13. _____

(A) 11,183 (B) 25,120

(C) 22,366 (D) 29,292

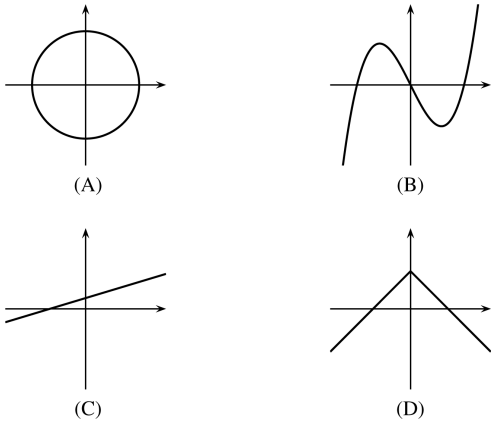
14. The data displayed in the table are linear. State the slope m of the line passing through the data points. 14. _____

x	−1	0	1	2	3
y	−8	−5	−2	1	4

(A) $m = -3$ (B) $m = \frac{1}{3}$

(C) $m = 3$ (D) $m = -\frac{1}{3}$

15. Which of the following is **not** the graph of a function? 15. _____



16. Write a symbolic representation (formula) of a function g that computes the number of dollars in x dimes. 16. _____

(A) $g(x) = \frac{x}{10}$ (B) $g(x) = 10x$

(C) $g(x) = \frac{x}{0.10}$ (D) $g(x) = \frac{10}{x}$

17. The function P defined by 17. _____

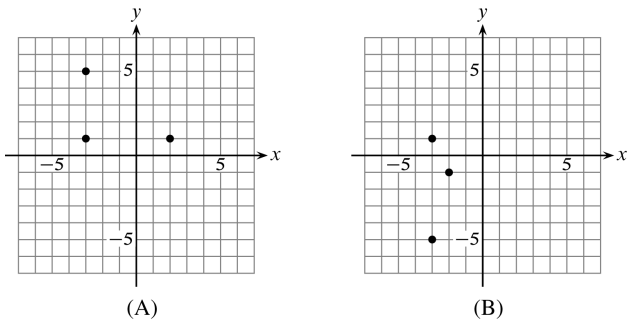
$$P(t) = t^2 + 4t + 33$$

models the number of diagnostic machines produced by a medical equipment manufacturer yearly, where $t = 0$ corresponds to the first year of production, 1996. Find the average rate of change in the number of machines produced per year between 2000 and 2005.

(A) 85 machines/year (B) 17 machines/year

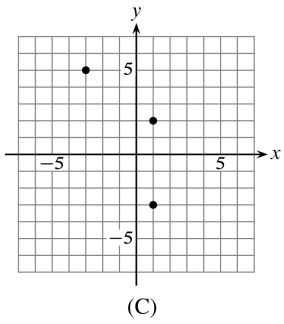
(C) 9 machines/year (D) 4009 machines/year

18. Plot the relation $\{(-3, 1), (2, 1), (5, -3)\}$ in the xy-plane. 18. _____

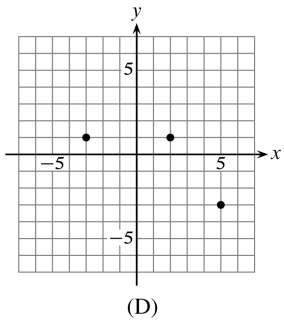


(A)

(B)



(C)



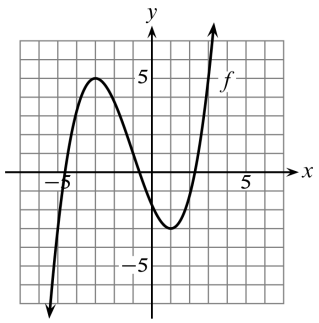
(D)

19. The table shows the *Pizzazz-Zee* corporation's monthly income for the first 6 months of last year in thousands of dollars. Find its median monthly income for this period to the nearest thousand dollars. 19. _____

Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Income	32	312	92	212	272	188

(A) $185,000 (B) $554,000
(C) $200,000 (D) $280,000

20. Use the graph to determine the intervals on which f is increasing and where it is decreasing. 20. _____



(A) Increasing: $(-\infty, 5] \cup [-3, \infty)$
Decreasing: $[-3, 1]$

(B) Increasing $(-\infty, -3] \cup [1, \infty)$
Decreasing: $[-3, 1]$

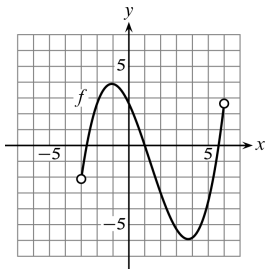
(C) Increasing: $[-3, \infty)$
Decreasing: $[5, -\infty)$

(D) Increasing: $[1, \infty)$
Decreasing: $[-3, -\infty)$

1. Let a function f be represented symbolically by $f(x) = 9 - x^2$. Find $f(-5)$. 1. _____

(A) 34 (B) -16
(C) 19 (D) -1

2. Use the graph of f to determine its domain. 2. _____



(A) $\{x \mid -6 \le x \le 5\}$
(B) $\{x \mid -3 < x < 6\}$
(C) All real numbers
(D) $\{x \mid -2.7 < x < 5.7\}$

3. Lake Mead, formed by the construction of the Hoover Dam, covers 7.59×10^8 square feet and contains a total volume of 1.37×10^{11} cubic feet of water. Find the average depth of Lake Mead. 3. _____

(A) 180.5 feet (B) 1,805 feet
(C) 1.805×10^{-3} feet (D) 18.05 feet

4. If possible, find the slope of the line passing through $(2.1, -5.3)$ and $(5.6, -10.9)$. 4. _____

(A) -1.6 (B) -0.625
(C) undefined (D) 1.6

5. Determine which set of ordered pairs does **not** represent a function. 5. _____

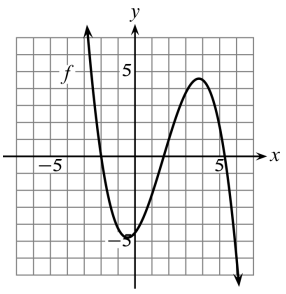
(A) $\{(1, -2), (2, 0), (3, 0), (4, 4)\}$ (B) $\{(1, -4), (2, 0), (3, 0), (4, 2)\}$
(C) $\{(4, 1), (0, 2), (0, 3), (4, 4)\}$ (D) $\{(1, 1), (2, 0), (3, 0), (4, -4)\}$

6. The table displays the monthly rainfall for Hilo, Hawaii, for the last six months in a typical year. Find the mean monthly rainfall to the nearest tenth of an inch for these six months. 6. _____

Month	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Rainfall (inches)	7.0	13.7	8.1	6.5	2.9	10.5

(A) 48.7 in. (B) 7.6 in.
(C) 24.4 in. (D) 8.1 in.

7. Use the graph of f to evaluate $f(2)$. 7. _____



(A) 0
(B) 1
(C) 5
(D) −3.3

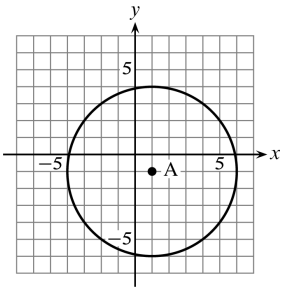
8. Find the domain of $f(x)=\dfrac{1}{\sqrt{x-5}}$. 8. _____

(A) $\{x \mid x = 5\}$ (B) $\{x \mid x \le 5\}$
(C) $\{x \mid x > 5\}$ (D) $\{x \mid x \ne 5\}$

9. Find the midpoint of the line segment joining the points $(-3.1, -6.5)$ and $(6.8, -3.7)$. 9. _____

(A) $(-4.95, -1.4)$ (B) $(-4.8, 1.55)$
(C) $(1.7, 5.25)$ (D) $(1.85, -5.1)$

10. Find the equation of the circle. 10. _____



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

11. Find the distance between the points $(-7.3, -1.47)$ and $(-4.5, 1.47)$ to the nearest hundredth. 11. _____

(A) 5.74 (B) 16.48
(C) 11.80 (D) 4.06

12. Find the domain and range of the relation 12. _____

$$S=\{(1.7,-3.2),\ (-3.7,-2.3),\ (-2.5,3.7),\ (5.3,4.1),\ (2.9,-1.2)\}.$$

(A) D = {−3.2, −2.3, 3.7, 4.1, −1.2}
R = {1.7, −3.7, −2.5, 5.3, 2.9}
(B) D = {1.7, −3.7, −2.5, 5.3, 2.9}
R = {−3.2, −2.3, 3.7, 4.1, −1.2}
(C) D = {1.7, −3.2, −3.7, −2.3, −2.5}
R = {3.7, 5.3, 4.1, 2.9, −1.2}
(D) D = {−1.5, −6.0, 1.2, 9.4, 1.7}
R = {4.9, −1.4, −6.2, 1.2, 4.1}

13. In 1980 the population of Albuquerque, New Mexico was 332,920 and in 2000 it was 448,362. Use the midpoint formula to estimate Albuquerque's population in 1990. 13. _____

(A) 386,353 (B) 351,298

(C) 115,442 (D) 390,641

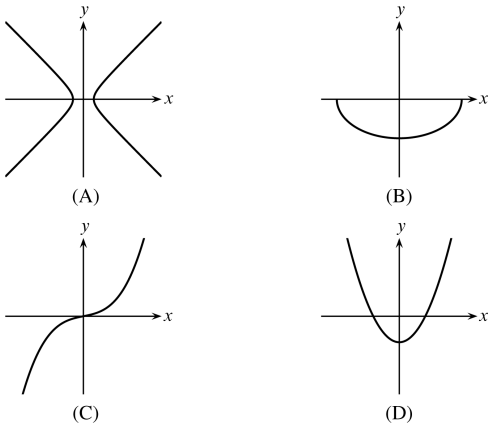
14. The data displayed in the table are linear. State the slope m of the line passing through the data points. 14. _____

x	−2	0	2	4	6
y	4	1	−2	−5	−8

(A) $m = -\frac{3}{2}$ (B) $m = \frac{2}{3}$

(C) $m = -\frac{2}{3}$ (D) $m = \frac{3}{2}$

15. Which of the following is **not** the graph of a function? 15. _____



16. Write a symbolic representation (formula) of a function g that computes the number of dimes in x dollars. 16. _____

(A) $g(x) = 0.10x$ (B) $g(x) = \frac{x}{10}$

(C) $g(x) = 10x$ (D) $g(x) = \frac{x}{0.10}$

17. The function P defined by 17. _____

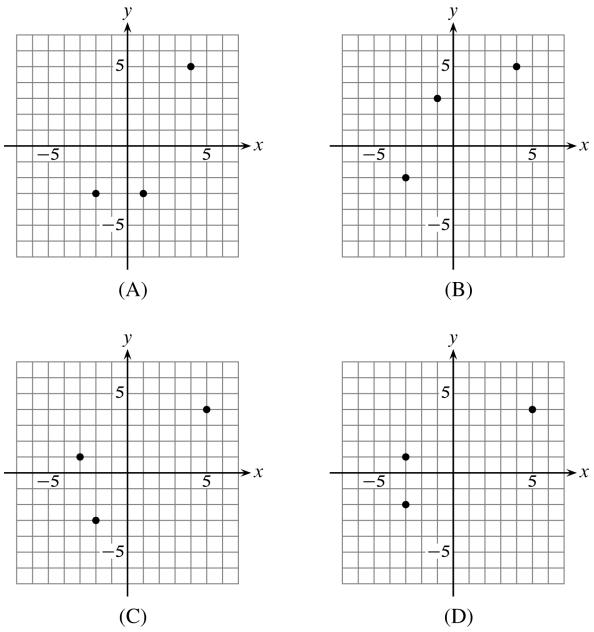
$$P(t) = 2.5t^2 + 0.5t + 12$$

models the number of diagnostic machines produced by a medical equipment manufacturer yearly, where $t = 0$ corresponds to the first year of production, 1998. Find the average rate of change in the number of machines produced yearly between 2000 and 2005.

(A) 23 machines/year (B) 10,013 machines/year

(C) 115 machines/year (D) 13 machines/year

18. Plot the relation $\{(-3,1),\ (-3,-2),\ (5,4)\}$ in the xy-plane. 18. _____

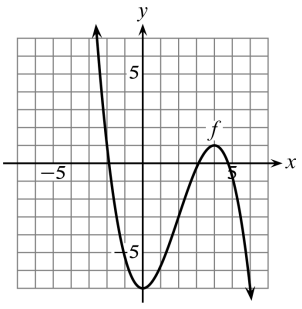


19. The table shows the *Pizzazz-Zee* corporation's income for the first 6 months of last year in thousands of dollars. Find its median monthly income for this period to the nearest thousand dollars. 19. _____

Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Income	193	171	257	329	379	221

(A) $239,000 (B) $258,000
(C) $208,000 (D) $920,000

20. Use the graph to determine the intervals on which f is increasing and which it is decreasing. 20. _____



(A) Increasing: $[-7,1]$
Decreasing: $(\infty,-7]\cup[1,-\infty)$

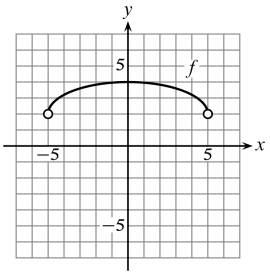
(B) Increasing: $[-7,\infty)$
Decreasing: $[1,-\infty)$

(C) Increasing: $[0,4]$
Decreasing: $[-\infty,0]\cup[4,\infty)$

(D) Increasing: $[0,-\infty)$
Decreasing: $[4,\infty)$

1. Let a function f be represented symbolically by $f(x) = 6 - x^2$. Find $f(-4)$. 1. _____

2. Use the graph of f to determine its domain. 2. _____



3. Lake Roosevelt, formed by the construction of the Grand Coulee Dam, covers 3.98×10^8 square feet and contains a total volume of 2.51×10^{10} cubic feet of water. Find the average depth of Lake Roosevelt to the nearest tenth of a foot. 3. _____

4. If possible, find the slope of the line passing through $(-1.7, -5.3)$ and $(0.1, -9.8)$. 4. _____

5. Determine which set of ordered pairs does **not** represent a function. 5. _____

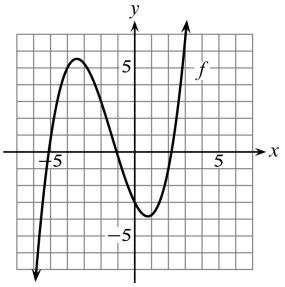
(A) $\{(1, 2), (2, 4), (3, 0), (4, 2)\}$ (B) $\{(1, -8), (2, 2), (3, 0), (4, 4)\}$

(C) $\{(-1, 1), (-2, 2), (-1, 3), (0, 4)\}$ (D) $\{(1, 4), (2, 4), (3, 4), (4, 4)\}$

6. The table displays the monthly rainfall for Tampa, Florida, for the first six months in a typical year. Find the mean monthly rainfall to the nearest hundredth of an inch for these six months. 6. _____

Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Rainfall (inches)	2.2	2.7	2.8	1.8	2.9	5.5

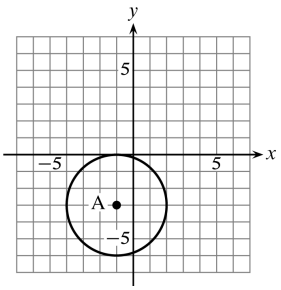
7. Use the graph of f to evaluate $f(-2)$. 7. _____



8. Find the domain of $f(x) = \sqrt{9 - x}$. 8. _____

9. Find the midpoint of the line segment joining the points $(4.1, 1.9)$ and $(6.1, -3.5)$. 9. _____

10. Find the equation of the circle. 10. _____



11. Find the distance between the points $(11.2, -8.9)$ and $(2.7, 11.5)$ to the nearest tenth. 11. _____

12. Find the domain and range of the relation 12. _____

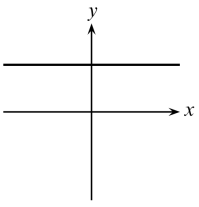
$$S = \{(-4.8, -1.2),\ (1.5, -2.7),\ (3.2, 5.4),\ (1.9, 5.1),\ (2.9, -1.7)\}.$$

13. In 1980 the population of Austin, Texas was 345,890 and in 2000 it was 659,627. Use the midpoint formula to estimate Austin's population in 1990. 13. _____

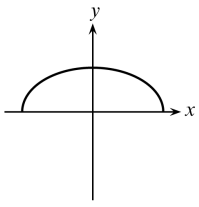
14. The data displayed in the table are linear. State the slope m of the line passing through the data points. 14. _____

x	−4	−2	0	2	4
y	−13	−8	−3	2	7

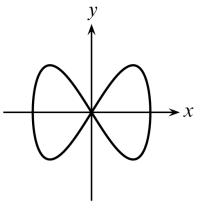
15. Which of the following is **not** the graph of a function? 15. _____



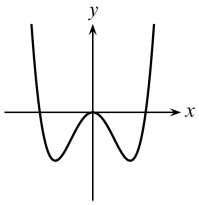
(A)



(B)



(C)



(D)

16. Write a symbolic representation (formula) of a function f that computes the number of ounces in x pounds. 16. _____

17. The function P defined by 17. _____

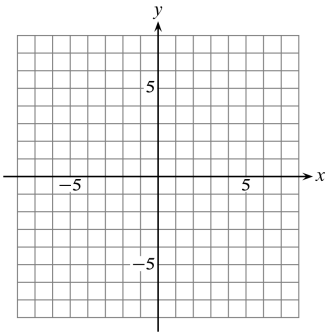
$$P(t) = 1.5t^2 + 2.5t + 42$$

models the number of diagnostic machines produced by a medical equipment manufacturer yearly, where $t = 0$ corresponds to the first year of production, 1993. Find the average rate of change in the number of machines produced yearly between 1995 and 2000.

18. Plot the relation 18. _____

$$S = \{(-3, 7),\ (-1, 3),\ (-5, -3),\ (8, -1),\ (2, 2)\}$$

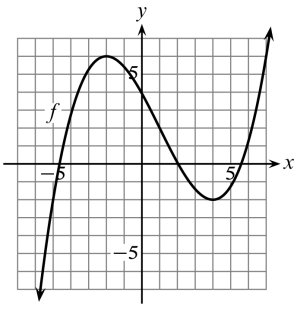
in the xy-plane.



19. The table shows the *Pizzazz-Zee* corporation's income for the first 6 months of last year in thousands of dollars. Find its median monthly income for this period to the nearest thousand dollars. 19. _____

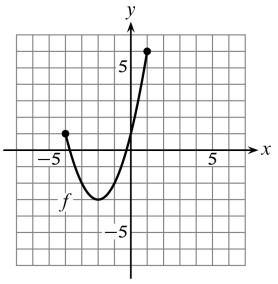
Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Income	127	93	173	125	137	149

20. Use the graph to determine the intervals on which f is increasing and on which it is decreasing. 20. _____



1. Let a function f be represented symbolically by $f(x) = 11 - x^2$. Find $f(-5)$. 1. _____

2. Use the graph of f to determine its domain. 2. _____



3. Lake Powell, formed by the construction of the Glen Canyon Dam, covers 7.78×10^8 square feet and contains a total volume of 9.84×10^{10} cubic feet of water. Find the average depth of Lake Powell to the nearest tenth of a foot. 3. _____

4. If possible, find the slope of the line passing through $(4.2, -1.3)$ and $(7.4, 3.5)$. 4. _____

5. Determine which set of ordered pairs does **not** represent a function. 5. _____

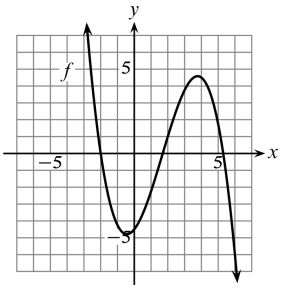
   (A) $\{(1, 2), (2, 4), (3, 6), (4, 8)\}$ (B) $\{(8, 4), (6, 3), (4, 2), (2, 1)\}$

   (C) $\{(-1, \pi), (-2, \pi), (-3, \pi), (-4, \pi)\}$ (D) $\{(\pi, 1), (\pi, 2), (\pi, 3), (\pi, 4)\}$

6. The table displays the monthly rainfall for Tampa, Florida, for the last six months in a typical year. Find the mean monthly rainfall to the nearest hundredth of an inch for these six months. 6. _____

Month	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Rainfall (inches)	6.4	7.6	6.5	2.4	1.6	2.3

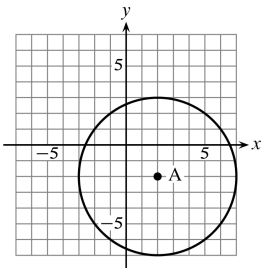
7. Use the graph of f to evaluate $f(-2)$. 7. _____



8. Find the domain of $f(x) = \sqrt{3 + x}$. 8. _____

9. Find the midpoint of the line segment joining the points $(-1.3, 5.7)$ and $(4.6, 2.1)$. 9. _____

10. Find the equation of the circle. 10. _____



11. Find the distance between the points (1.81. 8.13) and (−5.11, 2.94) to the nearest hundredth. 11. _____

12. Find the domain and range of the relation 12. _____

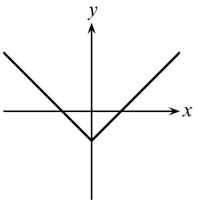
$$S = \{(4.8, 2.1),\ (5.2, 1.9),\ (-1.7, -4.3),\ (2.2, -3.9),\ (-4.9, -1.1)\}.$$

13. In 1980 the population of Portland, Oregon was 368,148 and in 2000 it was 529,209. Use the midpoint formula to estimate Portland's population in 1990. 13. _____

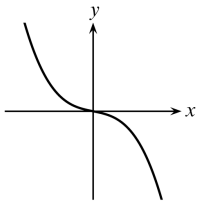
14. The data displayed in the table are linear. State the slope m of the line passing through the data points. 14. _____

x	−9	−5	−1	3	7
y	3	2	1	0	−1

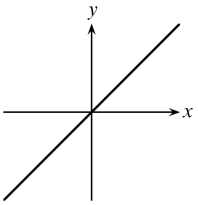
15. Which of the following is **not** the graph of a function? 15. _____



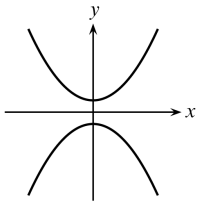
(A)



(B)



(C)



(D)

16. Write a symbolic representation (formula) of a function f that computes the number of pounds in x ounces. 16. _____

17. The function P defined by 17. _____

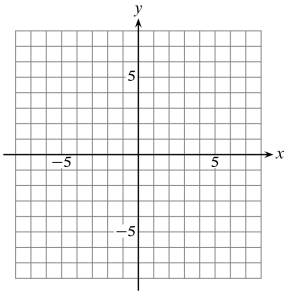
$$P(t) = 0.5t^2 + 3.5t + 25$$

models the number of diagnostic machines produced by a medical equipment manufacturer yearly, where $t = 0$ corresponds to the first year of production, 1997. Find the average rate of change in the number of machines produced per year between 2000 and 2005.

18. Plot the relation 18. _____

$$S = \{(-4, 1),\ (2.5),\ (-1, 1),\ (3, 6),\ (4, -1)\}$$

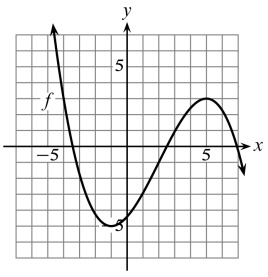
in the xy-plane.



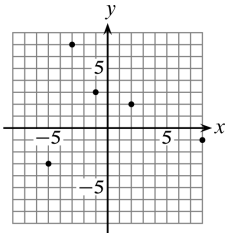
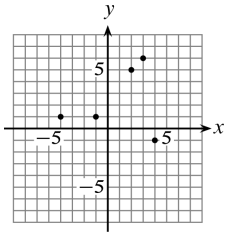
19. The table shows the *Pizzazz-Zee* corporation's income for the first 6 months of last year in thousands of dollars. Find its median monthly income for this period to the nearest thousand dollars. 19. _____

Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Income	231	113	387	217	285	309

20. Use the graph to determine the intervals on which f is increasing and on which it is decreasing. 20. _____



Test 1 Solutions

Form A	Form B	Form C	Form D
1. D	1. B	1. –10	1. –14
2. C	2. B	2. $\{x \mid -5 < x < 5\}$	2. $\{x \mid -4 \le x \le 1\}$
3. D	3. A	3. 63.1 feet	3. 126.5 feet
4. D	4. A	4. –2.5	4. 1.5
5. A	5. C	5. C	5. D
6. B	6. D	6. 2.98 in	6. 4.47 in.
7. A	7. B	7. 3	7. 0
8. C	8. C	8. $\{x \mid x \le 9\}$	8. $\{x \mid x \ge -3\}$
9. A	9. D	9. (5.1, –0.8)	9. (1.65, 3.9)
10. B	10. A	10. $(x+1)^2 + (y+3)^2 = 9$	10. $(x-2)^2 + (y+2)^2 = 25$
11. B	11. D	11. 22.1	11. 8.65
12. D	12. B	12. D = $\{-4.8, 1.5, 3.2, 1.9, 2.9\}$ R = $\{-1.2, -2.7, 5.4, 5.1, -1.7\}$	12. D = {4.8, 5.2, –1.7, 2.2, –4.9} R = {2.1, 1.9, –4.3, –3.9, –1.1}
13. B	13. D	13. 502,759	13. 448,679
14. C	14. A	14. $m = \frac{5}{2}$	14. $m = -\frac{1}{4}$
15. A	15. A	15. C	15. D
16. A	16. C	16. $f(x) = 16x$	16. $f(x) = \frac{x}{16}$
17. B	17. A	17. 16 machines/year	17. 9 machines/year
18. D	18. D	18. 	18. 
19. C	19. A	19. $132,000	19. $258,000
20. B	20. C	20. Increasing: $(-\infty, -2] \cup [4, \infty)$ Decreasing: [–2, 4]	20. Increasing: [–1, 5] Decreasing: $(-\infty, -1] \cup [5, \infty)$