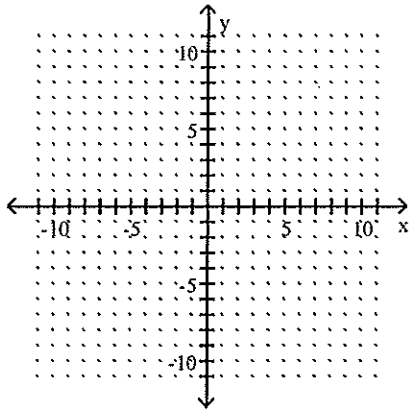
Exam Chapter 9 Practice Test #2

Name_____

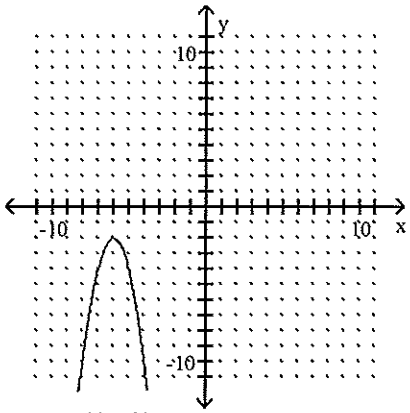
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Sketch the graph of the function. Give the coordinates of the vertex.

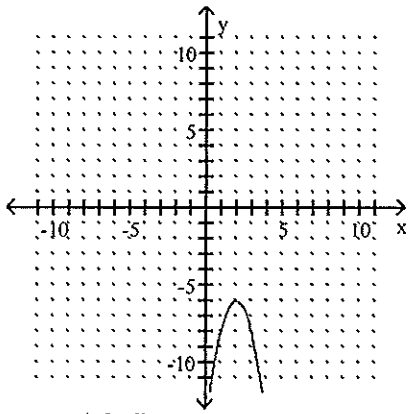
1) $f(x) = -2(x - 6)^2 - 2$ 1) _____



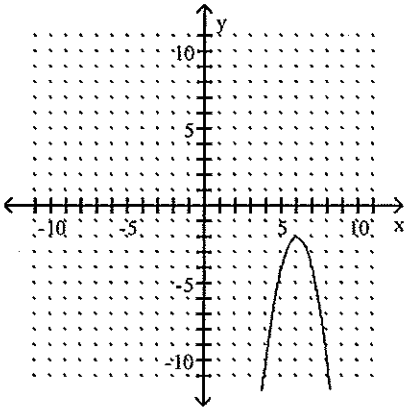
A) vertex (–6, –2)



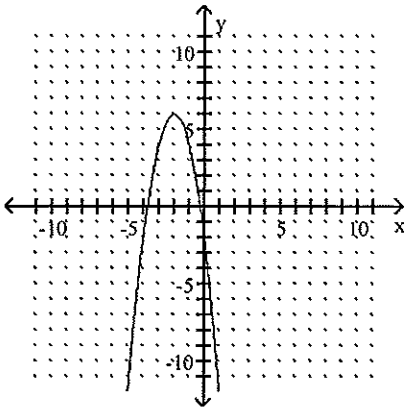
B) vertex (2, –6)



C) vertex (6, –2)

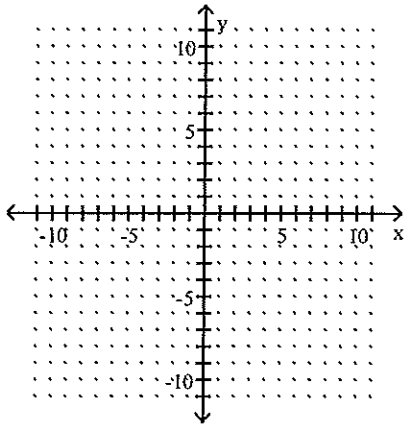


D) vertex (–2, 6)

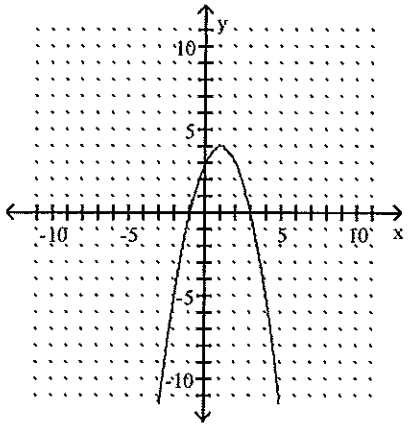


2) $f(x) = -(x + 1)^2 + 4$

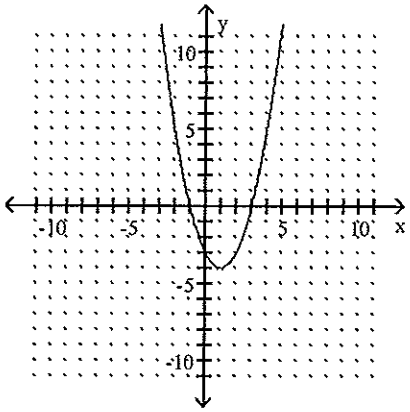
2) _____



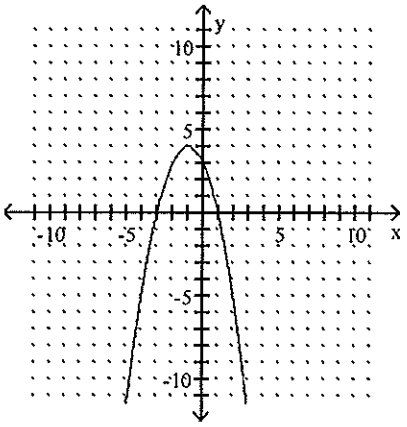
A) vertex: (1, 4)



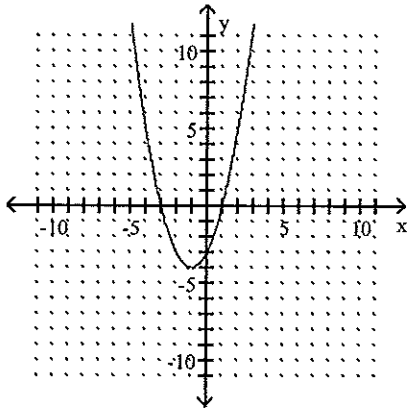
B) vertex: (1, – 4)



C) vertex: (– 1, 4)



D) vertex: (– 1, –4)



Solve the problem.

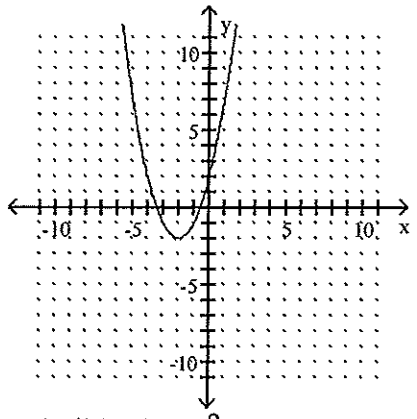
3) The table shows the number of new cases (in thousands) of a certain disease diagnosed in a country in various years. 3) _____

Year	Number (in thousands) of cases diagnosed
1997	49.4
1998	43.2
1999	41.4
2000	39.3
2001	39.6
2002	40.9
2003	40.9
2004	45.7

Let n = f(t) be the number of new cases (in thousands) of the disease diagnosed at t years since 1997. Suppose that you wish to model f using a quadratic equation. What is the vertex of the model? What does it mean in this situation?

A) (3, 39.3); the smallest number of new cases diagnosed was 39,300 in the year 2000
B) (0, 39.3); the smallest number of new cases diagnosed was 39,300 in the year 2000
C) (7, 45.7); the largest number of new cases diagnosed was 45,700 in the year 2004
D) (0, 49.4); the largest number of new cases diagnosed was 49,400 in the year 1997

4) Find an equation of the function f sketched below in the form $f(x) = a(x - h)^2 + k$. Use the vertex to find the values of h and k and use a second point on the graph to find the value of a. 4) _____



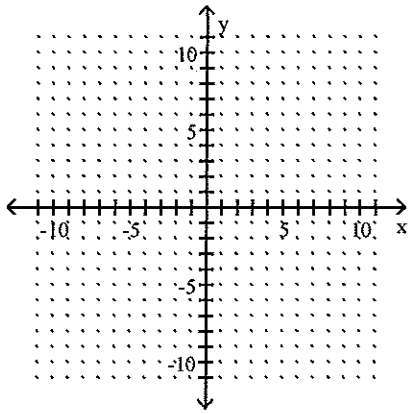
A) $f(x) = (x + 2)^2 - 2$
B) $f(x) = (x - 2)^2 - 2$
C) $f(x) = (x - 2)^2 + 2$
D) $f(x) = (x + 2)^2 + 2$

5) Find the x-coordinate of the vertex of a parabola passing through the points (0, 5) and (20, 5). 5) _____

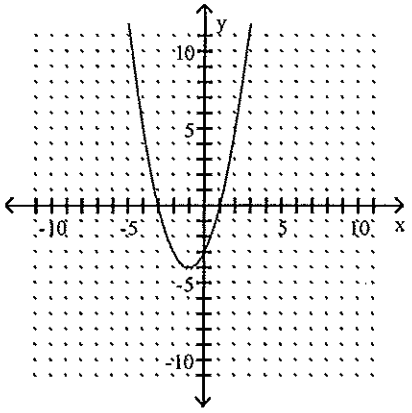
A) 20 B) 5 C) 10 D) 2.5

Sketch by hand the graph of the function. Give the coordinates for the vertex.

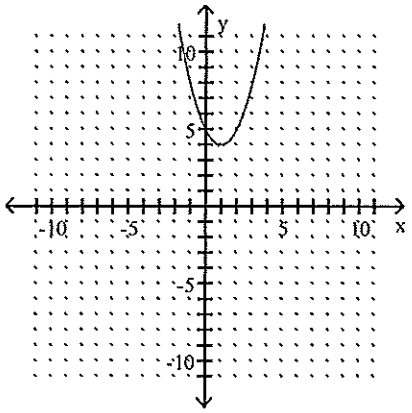
6) $y = x^2 + 2x + 5$ 6) _____



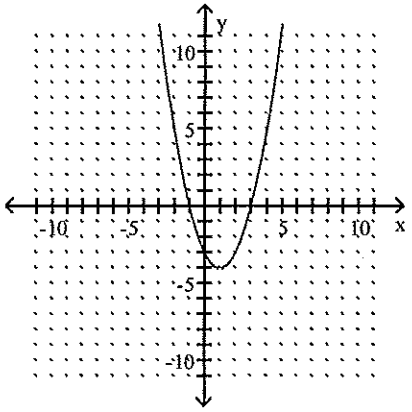
A) vertex: (-1, -4)



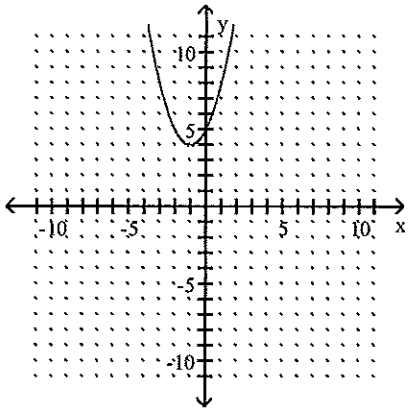
B) vertex: (1, 4)



C) vertex: (1, -4)



D) vertex: (-1, 4)



Solve the problem.

7) An arrow is fired into the air with an initial velocity of 128 feet per second. The height in feet of the arrow t seconds after it was shot into the air is given by the function $h(t) = -16t^2 + 128t$. Find the maximum height of the arrow. 7) _____

A) 768 ft B) 64 ft C) 256 ft D) 448 ft

8) A developer wants to enclose a rectangular grassy lot that borders a city street for parking. If the developer has 280 feet of fencing and does not fence the side along the street, what is the largest area that can be enclosed? 8) _____

A) 14,700 ft^2 B) 9800 ft^2 C) 4900 ft^2 D) 19,600 ft^2

Simplify.

9) $\sqrt{24}$ 9) _____

A) $2\sqrt{6}$ B) $6\sqrt{2}$ C) 4 D) 12

10) $-\sqrt{52}$ 10) _____

A) 26 B) $\sqrt{52}$ C) $-4\sqrt{13}$ D) $-2\sqrt{13}$

11) $\frac{4}{\sqrt{5}}$ 11) _____

A) $4\sqrt{5}$ B) $\frac{4\sqrt{5}}{5}$ C) $\frac{16\sqrt{5}}{5}$ D) 29

Solve.

12) $(2x + 5)^2 = 6$ 12) _____

A) $\frac{5 \pm \sqrt{6}}{2}$ B) $\frac{-5 \pm \sqrt{6}}{2}$ C) $-\frac{11}{2}, \frac{1}{2}$ D) $\frac{\sqrt{6} \pm 5}{2}$

13) $\left(x + \frac{5}{4}\right)^2 = \frac{10}{16}$ 13) _____

A) $\frac{-5 + \sqrt{10}}{4}$ B) $\frac{\sqrt{10} \pm 5}{4}$ C) $\frac{-5 \pm \sqrt{10}}{4}$ D) $\frac{5 \pm \sqrt{10}}{4}$

Find all x-intercepts.

14) $f(x) = 2x^2 + 7x - 9$ 14) _____

A) (1, 0) and $(\frac{9}{2}, 0)$ B) no x-intercepts

C) (1, 0) and $(-\frac{9}{2}, 0)$ D) $(-9, 0)$ and $(\frac{1}{2}, 0)$

Simplify.

15) $\sqrt{-240}$ 15) _____

A) $4i\sqrt{15}$ B) $-4\sqrt{15}$ C) $4\sqrt{15}$ D) $-4i\sqrt{15}$

16) $\sqrt{-\frac{5}{7}}$ 16) _____

A) $-\frac{\sqrt{35}}{7}$ B) $\frac{i\sqrt{35}}{49}$ C) $\frac{i\sqrt{35}}{7}$ D) $\frac{\sqrt{35}}{7}$

Solve the equation by completing the square.

17) $x^2 + 4x - 20 = 0$ 17) _____

A) $-2 \pm 2\sqrt{12}$ B) $2\sqrt{6} \pm 2$ C) $\pm 2\sqrt{6}$ D) $-2 \pm 2\sqrt{6}$

18) $x^2 + 3x - 9 = 0$ 18) _____

A) $\frac{-3 \pm 3\sqrt{5}}{2}$ B) $-3 \pm 3\sqrt{5}$ C) $\frac{-3 - 3\sqrt{5}}{2}$ D) $\frac{3 + 3\sqrt{5}}{2}$

19) $6x^2 + 6x + 7 = 6$ 19) _____

A) $\frac{-3 \pm \sqrt{15}}{6}$ B) $\frac{-3 \pm \sqrt{3}}{6}$ C) $\frac{-3 \pm \sqrt{3}}{12}$ D) $\frac{-6 \pm \sqrt{3}}{6}$

Find all complex-number solutions by completing the square.

20) $8x^2 + 3x + 1 = 0$ 20) _____

A) $\frac{-3 \pm i\sqrt{23}}{16}$ B) $\frac{3 \pm \sqrt{23}}{16}$ C) $\frac{-3 \pm \sqrt{23}}{16}$ D) $\frac{3 \pm i\sqrt{23}}{16}$

Use the quadratic formula to solve the given equation.

21) $x^2 = 12x + 11$ 21) _____

A) $-6 \pm \sqrt{47}$ B) $12 \pm \sqrt{155}$ C) $6 \pm \sqrt{11}$ D) $6 \pm \sqrt{47}$

22) $-3x^2 + 2x = -4$ 22) _____

A) $\frac{-1 \pm \sqrt{13}}{3}$ B) $\frac{1 \pm \sqrt{13}}{3}$ C) $-4, \frac{14}{3}$ D) $\frac{3 \pm \sqrt{13}}{9}$

Find all complex-number solutions by using the quadratic formula.

23) $-8x^2 = -5x + 1$ 23) _____

A) $\frac{5 \pm i\sqrt{7}}{16}$ B) $\frac{5 \pm \sqrt{7}}{16}$ C) $\frac{-5 \pm i\sqrt{7}}{16}$ D) $\frac{-5 \pm i\sqrt{7}}{8}$

Find all x-intercepts. Round the coordinates to the nearest tenth if necessary.

24) $f(x) = 2x^2 - 4x - 30$ 24) _____

A) (3, 0), (−5, 0) B) (3, 0), (5, 0) C) (−3, 0), (−5, 0) D) (−3, 0), (5, 0)

Solve the problem.

25) The sales for a gaming console for various years are listed in the table below. 25) _____

Year	Sales (in billions of dollars)
1992	0.78
1994	0.38
1996	0.18
1998	0.44
1999	1.20

Let f(t) represent the sales (in billions of dollars) at t years since 1990. A reasonable model is $f(t) = 0.065t^2 - 0.68t + 1.95$. Use the model to predict when the sales will be $10 billion.

A) 2009 B) 2010 C) 2008 D) 2007

26) Not all murder cases are solved. The percentages of murder cases solved in various years are listed in the table below. 26) _____

Year	Percent of Cases Solved
1988	70
1990	67
1992	65
1994	64
1996	67
1998	69

(Source: Bureau of Justice Statistics)

Let f(t) represent the percent of murder cases solved at t years since 1980. A reasonable model is $f(t) = 0.20t^2 - 5.31t + 99.72$. Find the approximate vertex of f. What does it mean in terms of the situation?

A) (14, 64); 64% of cases were solved in 1994, which is the lowest percent for any year.
B) (13.28, 64.47); 64.47% of cases were solved in 1993, which is the lowest percent for any year.
C) (14.78, 63.75); 63.75% of cases were solved in 1995, which is the lowest percent for any year.
D) (12.78, 63.12); 63.12% of cases were solved in 1993, which is the lowest percent for any year.

Answer Key
Testname: CHAPTER 9 TEST 2

1) C
2) C
3) A
4) A
5) C
6) D
7) C
8) B
9) A
10) D
11) B
12) B
13) C
14) C
15) A
16) C
17) D
18) A
19) B
20) A
21) D
22) B
23) A
24) D
25) C
26) B