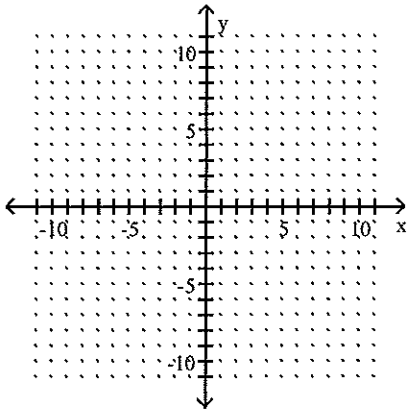
Exam Chapter 9 practice Test #1

Name_____

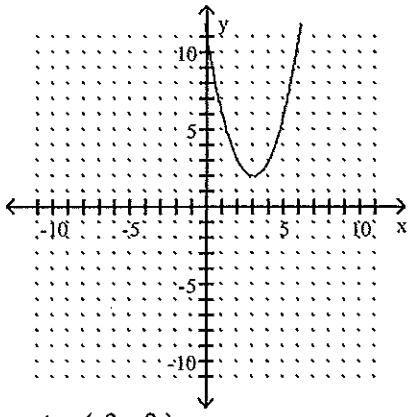
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

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

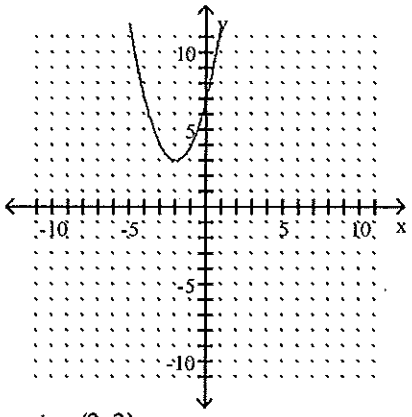
1) $f(x) = (x - 2)^2 + 3$ 1) _____



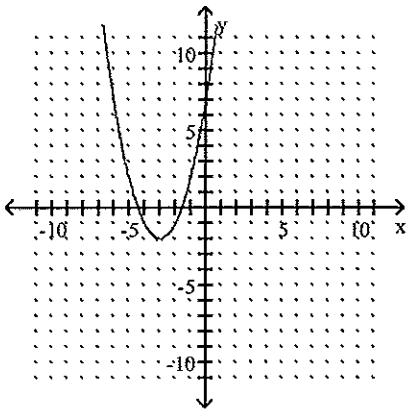
A) vertex (3, 2)



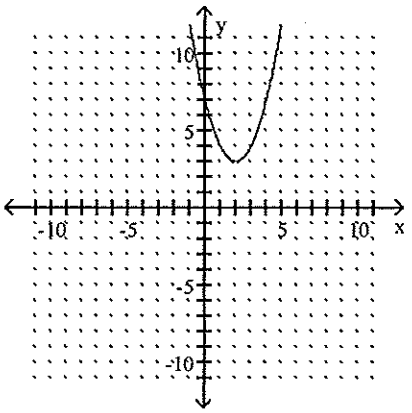
B) vertex (–2, 3)



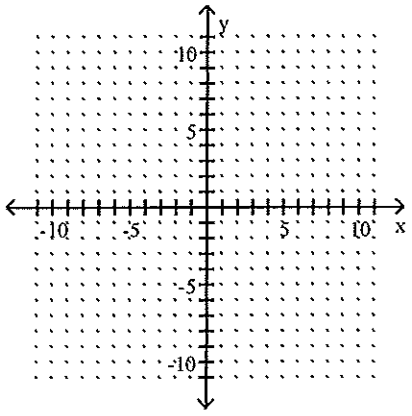
C) vertex (–3, –2)



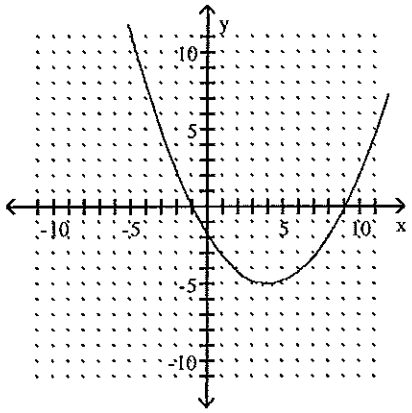
D) vertex (2, 3)



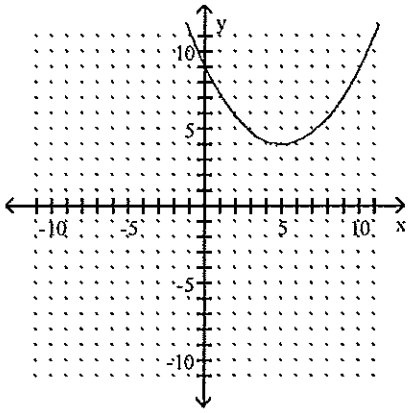
2) $f(x) = \frac{1}{5}(x + 4)^2 - 5$ 2) _____



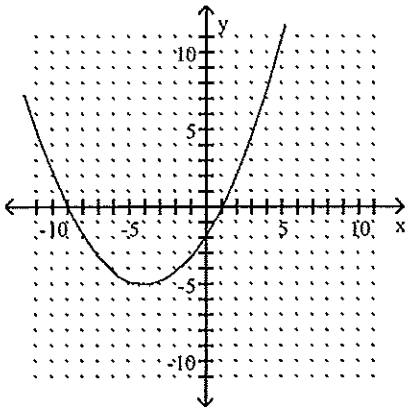
A) vertex (4, -5)



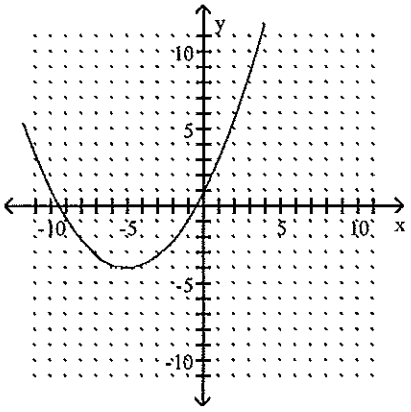
B) vertex (5, 4)



C) vertex (-4, -5)



D) vertex (-5, -4)



Solve the problem.

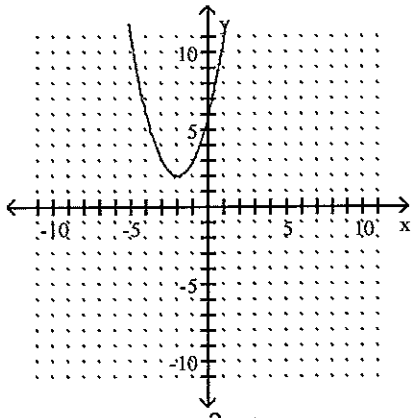
3) The table shows the number of new cases (in thousands) of a certain disease diagnosed in a country in various years. 3) _____

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. Find a quadratic equation for f in vertex form. Use the data for the year 2000 as the vertex and use the data for the year 2004 to find the value of a.

A) $f(t) = -0.23(t - 3)^2 + 49.4$
B) $f(t) = 0.4(t - 3)^2 + 39.3$
C) $f(t) = 0.71(t - 4)^2 + 39.3$
D) $f(t) = 6.4(t - 3)^2 + 39.3$

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) _____



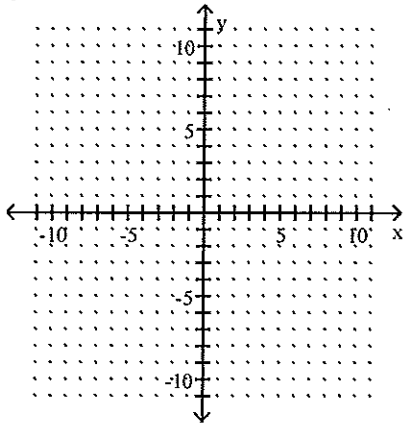
A) $f(x) = (x + 2)^2 - 2$
B) $f(x) = (x - 2)^2 - 2$
C) $f(x) = (x - 2)^2 + 2$
D) $f(x) = (x + 2)^2 + 2$

5) Find the x-coordinate of the vertex of a parabola passing through the points (-4, -4) and (8, -4). 5) _____

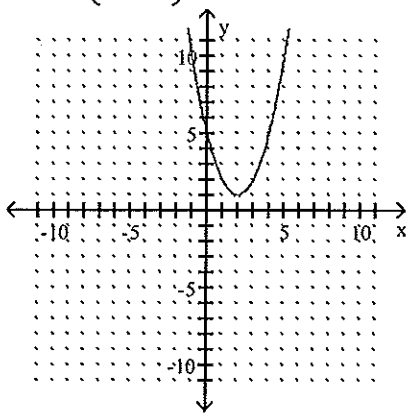
A) 8 B) 3 C) 2 D) 1

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

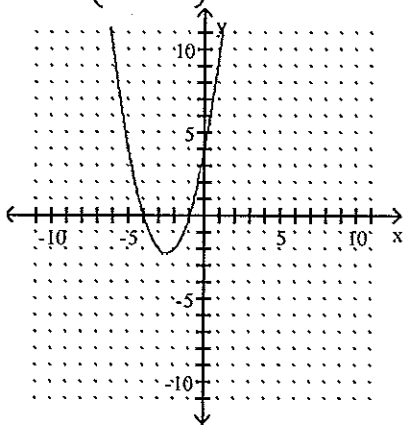
6) $y = x^2 + 5x + 4$ 6) _____



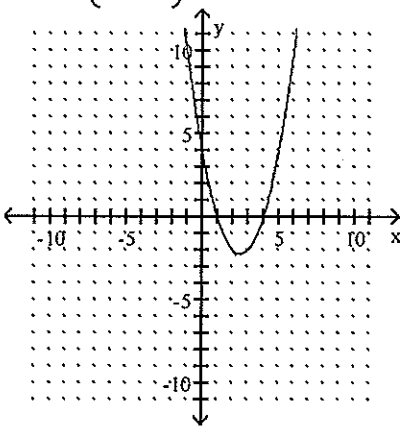
A) vertex: $\left(\frac{5}{2}, -\frac{9}{4}\right)$



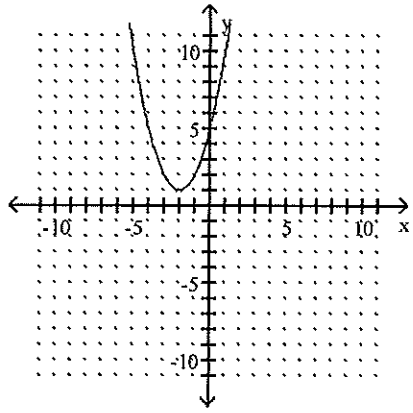
B) vertex: $\left(-\frac{5}{2}, -\frac{9}{4}\right)$



C) vertex: $\left(\frac{5}{2}, -\frac{9}{4}\right)$



D) vertex: $\left(-\frac{5}{2}, -\frac{9}{4}\right)$



Solve the problem.

7) April shoots an arrow upward into the air at a speed of 64 feet per second from a platform that is 33 feet high. The height of the arrow is given by the function $h(t) = -16t^2 + 64t + 33$, where t is the time is seconds. What is the maximum height of the arrow? 7) _____

A) 64 ft B) 33 ft C) 29 ft D) 97 ft

8) You have 244 feet of fencing to enclose a rectangular region. Find the dimensions of the rectangle that maximize the enclosed area. 8) _____

A) 63 ft by 59 ft B) 122 ft by 122 ft C) 122 ft by 30.5 ft D) 61 ft by 61 ft

Simplify.

9) $\sqrt{28}$ 9) _____

A) $2\sqrt{7}$ B) $\sqrt{28}$ C) $4\sqrt{7}$ D) 14

10) $\sqrt{300}$ 10) _____

A) $\sqrt{300}$ B) $3\sqrt{10}$ C) $10\sqrt{3}$ D) $100\sqrt{3}$

11) $\frac{19}{\sqrt{68}}$ 11) _____

A) $\frac{19\sqrt{17}}{17}$ B) $\frac{19}{34}$ C) $\frac{19\sqrt{17}}{2}$ D) $\frac{19\sqrt{17}}{34}$

Solve.

12) $(x + 3)^2 = 24$ 12) _____

A) $2\sqrt{6} \pm 3$ B) $-3 \pm 2\sqrt{6}$ C) $-3 + 2\sqrt{6}$ D) $-3 \pm 2\sqrt{12}$

13) $\left(x - \frac{1}{2}\right)^2 = \frac{121}{4}$ 13) _____

A) 5, −6 B) 6, −5 C) 12, −10 D) 10, −12

Find all x-intercepts.

14) $f(x) = -x^2 + 7x - 12$ 14) _____

A) (3, 0) and (−4, 0) B) (−3, 0) and (−4, 0)

C) (3, 0) and (4, 0) D) no x-intercepts

Simplify.

15) $-\sqrt{-98}$ 15) _____

A) $-7i\sqrt{2}$ B) $-7\sqrt{2}$ C) $7i\sqrt{2}$ D) $\pm 7i\sqrt{2}$

16) $\sqrt{-\frac{7}{100}}$ 16) _____

A) $\frac{\sqrt{7}}{10}$ B) $-\frac{\sqrt{7}}{10}$ C) $\frac{i\sqrt{7}}{100}$ D) $\frac{i\sqrt{7}}{10}$

Solve the equation by completing the square.

17) $x^2 + 14x = -30$ 17) _____

A) $7 \pm \sqrt{30}$ B) $-14 + \sqrt{30}$ C) $7 + \sqrt{19}$ D) $-7 \pm \sqrt{19}$

18) $x^2 + 5x + 5 = 0$ 18) _____

A) $\frac{-5 \pm \sqrt{5}}{2}$ B) $\frac{-5 \pm 3\sqrt{5}}{2}$ C) $\frac{5 \pm \sqrt{5}}{2}$ D) $\frac{-5 \pm \sqrt{5}}{10}$

19) $6x^2 + 10x + 3 = 0$ 19) _____

A) $\frac{-5 \pm \sqrt{7}}{12}$ B) $\frac{-5 \pm \sqrt{7}}{6}$ C) $\frac{-5 \pm \sqrt{43}}{6}$ D) $\frac{-10 \pm \sqrt{7}}{6}$

Find all complex-number solutions by completing the square.

20) $4x^2 - 3x + 1 = 0$ 20) _____

A) $\frac{3 \pm \sqrt{7}}{8}$ B) $\frac{-3 \pm i\sqrt{7}}{8}$

C) $\frac{3 \pm i\sqrt{7}}{8}$ D) $\frac{3 - i\sqrt{7}}{8}, \frac{-3 + i\sqrt{7}}{8}$

Use the quadratic formula to solve the given equation.

21) $3x^2 + 9x + 3 = 0$ 21) _____

A) $\frac{-3 \pm \sqrt{5}}{2}$ B) $\frac{-3 \pm \sqrt{5}}{6}$ C) $\frac{-3 \pm \sqrt{13}}{2}$ D) $\frac{-9 \pm \sqrt{5}}{2}$

22) $(x - 9)(x - 1) = 22$ 22) _____

A) $5 \pm \sqrt{38}$ B) $-5 \pm 2\sqrt{3}$ C) $-5 \pm \sqrt{38}$ D) $5 \pm 2\sqrt{3}$

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

23) $x^2 = -4x - 14$ 23) _____

A) $-2 \pm i\sqrt{10}$ B) $-2 \pm 10i$ C) $2 \pm i\sqrt{10}$ D) $-2 \pm \sqrt{10}$

Solve the problem.

24) The following table shows the number of housing starts in a beachside community in various years. Let f(t) be the number of housing starts at t years since 1991. Use a graphing calculator to plot a scattergram. Find and verify an equation of f. 24) _____

Year	Housing Starts
1992	200
1993	205
1994	210
1995	240
1996	245
1997	230
1998	220
1999	210

A) $f(t) = -2.679t^2 + 26.607t + 168.571$ B) $f(t) = -2.679t^2 + 26.607t - 168.571$

C) $f(t) = -2.679t^2 - 26.607t + 168.571$ D) $f(t) = 2.679t^2 + 26.607t + 168.571$

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 sales in 2006.

A) \$5.85 billion B) \$7.71 billion C) \$7.16 billion D) \$6.41 billion

26) The sales for a gaming console for various years are listed in the table below. 26) _____

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 $f(t) = 0.065t^2 - 0.68t + 1.95$. According to the model, when were sales at a minimum? What were the sales in that year?

A) 1995; \$166 million B) 1997; \$170 million
C) 1995; \$172 million D) 1996; \$180 million

Answer Key
Testname: CHAPTER 9 TEST 1

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