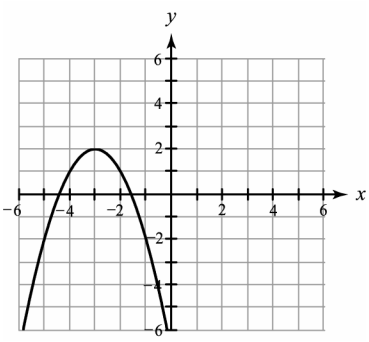
Chapter 8, Test Form D **Name:**

1. For the quadratic function graphed below, identify the vertex and the axis of symmetry. 1. _____



(a) $(-3,2)$; $x=2$ (b) $(2,-3)$; $y=-3$

(c) $(-3,2)$; $x=-3$ (d) $(2,-3)$; $x=2$

2. Find the vertex and axis of symmetry for the graph of $f(x)=-\frac{1}{3}x^2+2x-5$. 2. _____

(a) $(3,-2)$; $y=-2$ (b) $(3,-5)$; $x=3$

(c) $(3,-5)$; $y=-5$ (d) $(3,-2)$; $x=3$

3. Find the maximum *y*-value located on the graph of $y=-x^2+4x-20$. 3. _____

(a) -16 (b) 24 (c) 20 (d) -24

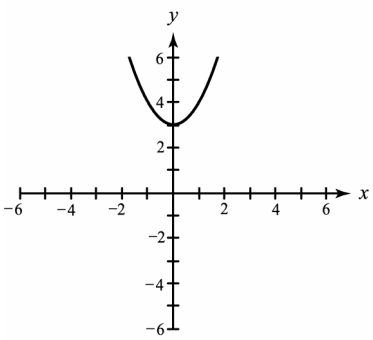
4. Find the exact value for the constant *a* so that $f(x)=ax^2+4$ models the data in in the table. 4. _____

x	-1	0	1	2
$f(x)$	2	4	2	-4

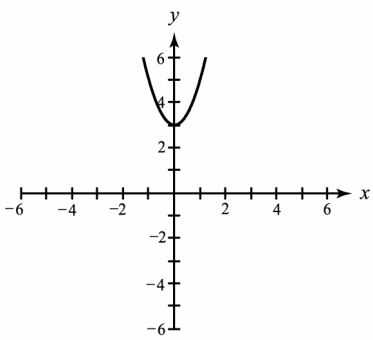
(a) $a=4$ (b) $a=\frac{1}{2}$ (c) $a=2$ (d) $a=-2$

5. Graph $f(x) = 2x^2 + 3$. 5. _____

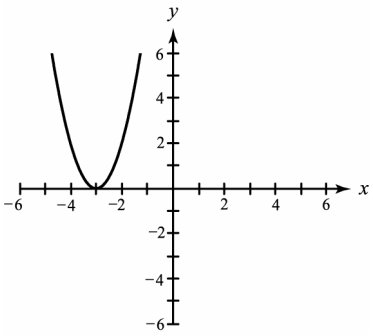
(a)



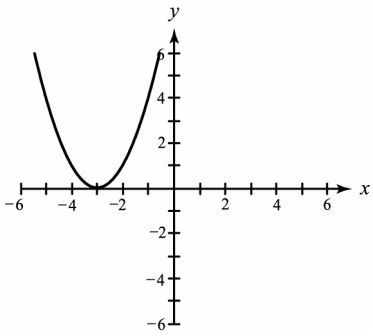
(b)



(c)

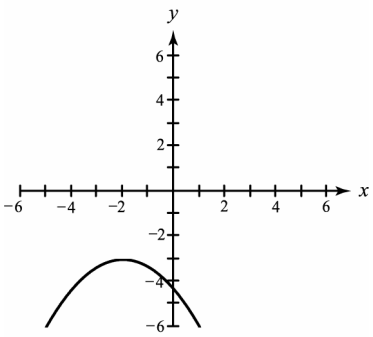


(d)

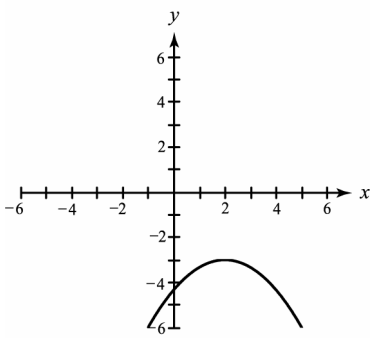


6. Graph $f(x) = -\frac{1}{3}(x+2)^2 - 3$. 6. _____

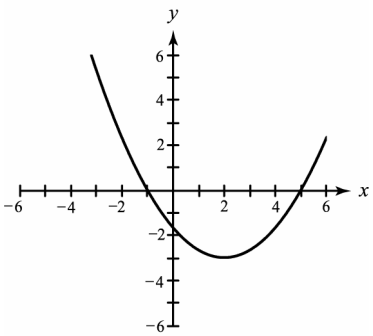
(a)



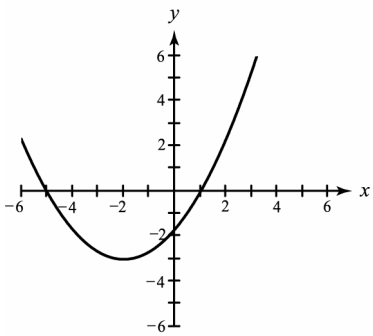
(b)



(c)



(d)

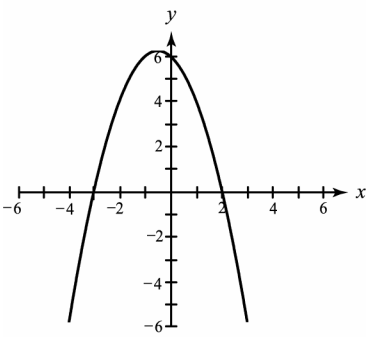


7. Write $y = x^2 - 4x + 8$ in vertex form. Identify the vertex and axis of symmetry. 7. _____

(a) $(-2, 4)$; $x = -2$ (b) $(-4, 8)$; $x = 8$

(c) $(2, 4)$; $x = 2$ (d) $(2, 12)$; $x = 8$

8. Use the graph of $f(x) = ax^2 + bx + c$ to solve $ax^2 + bx + c = 0$. 8. _____



(a) no real solutions (b) −3, 2

(c) 6 (d) 1, 5

9. Solve the quadratic equation $2x^2 - 9x - 5 = 0$. 9. _____

(a) $\frac{9 \pm i\sqrt{31}}{4}$ (b) $\frac{-9 \pm \sqrt{41}}{4}$ (c) $-\frac{1}{2}, 5$ (d) $-\frac{3}{2}, 3$

10. Solve the quadratic equation $4x^2 + 6 = 10x^2$. 10. _____

(a) $-1, 1$ (b) $-3, \frac{1}{2}$ (c) $\frac{3}{2}, 1$ (d) 1

11. Solve $x^2 - 3x = 2$ by completing the square. 11. _____

(a) 1, 2 (b) $\frac{3 \pm \sqrt{17}}{2}$ (c) $\frac{-3 \pm i\sqrt{5}}{2}$ (d) $3 \pm \frac{1}{2}$

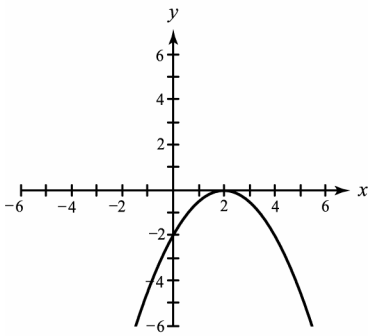
12. Solve $-3x(x+2)=2$ by using the quadratic formula. 12. _____

(a) $-1\pm 2\sqrt{3}$ (b) $\dfrac{2+i\sqrt{7}}{3}$ (c) $\dfrac{-3\pm\sqrt{3}}{3}$ (d) $-\frac{1}{3}, -\frac{1}{2}$

13. Solve the quadratic equation $3x^2 = 4x - 2$ by using the quadratic formula. 13. _____

(a) $\dfrac{2\pm i\sqrt{2}}{3}$ (b) $\dfrac{4\pm\sqrt{2}}{6}$ (c) $\frac{1}{3}$, 2 (d) $\dfrac{-2\pm\sqrt{10}}{3}$

14. A graph of $y = ax^2 + bx + c$ is shown. Solve $ax^2 + bx + c = 0$ and determine whether the discriminant is positive, negative, or zero. 14._____



(a) −2; positive (b) −2; negative (c) 2; zero (d) 2; positive

15. Evaluate the discriminant and determine the number of real solutions for $2x^2 - x - 3 = 0$. 15. _____

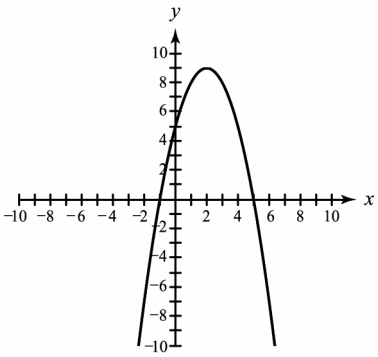
(a) d = −23,
no real solutions

(b) d = 0,
no real solutions

(c) d = 25,
2 real solutions

(d) d = 0,
1 real solution

16. The graph of $y = ax^2 + bx + c$ is shown. Solve $ax^2 + bx + c \geq 0$. 16. _____



(a) $-1 < x < 5$

(b) $x < -1$ or $x > 5$

(c) $x \leq -1$ or $x \geq 5$

(d) $-1 \leq x \leq 5$

17. Solve $3x^2 - 11x - 4 \leq 0$. Write your answer in interval notation. 17. _____

(a) $\left[-1, \frac{4}{3}\right]$

(b) $\left[-\frac{1}{3}, 4\right]$

(c) $(-\infty, -1] \cup \left[\frac{4}{3}, \infty\right)$

(d) $\left(-\infty, -\frac{1}{3}\right] \cup [4, \infty)$

18. Solve $3x^2 > 12x$. Write your answer in interval notation. 18. _____

(a) $(-\infty, 0) \cup (4, \infty)$

(b) $(-\infty, -4)$

(c) $(4, \infty)$

(d) $(-\infty, -4) \cup (0, \infty)$

19. Solve $x^4 - 11x^2 + 28 = 0$. Find all real solutions. 19. _____

(a) $\pm\sqrt{2}, \pm\sqrt{14}$

(b) $\pm 2, \pm\sqrt{7}$

(c) no real solutions

(d) $\pm 2, \pm 7$

20. Solve $2x^2 - 4x + 5 = 0$. Find all complex solutions. 20. _____

(a) $\pm\dfrac{3i\sqrt{6}}{2}$

(b) $\pm\dfrac{i\sqrt{6}}{2}$

(c) $1 \pm 2i\sqrt{6}$

(d) $\dfrac{2 \pm i\sqrt{6}}{2}$