

**Practice**

Form G

**Quadratic Systems****Solve each system by graphing. Check your answers.**

1. 
$$\begin{cases} y = -x^2 + 3x + 2 \\ y = 3x + 2 \end{cases} \quad (0, 2)$$

2. 
$$\begin{cases} y = x^2 + 2x - 3 \\ y = 2x + 1 \end{cases} \quad (-2, -3), (2, 5)$$

3. 
$$\begin{cases} y = -2x^2 + 4x + 3 \\ y = 2x - 1 \end{cases} \quad (-1, -3), (2, 3)$$

4. 
$$\begin{cases} y = 2x^2 - 5x \\ y = -3x + 4 \end{cases} \quad (-1, 7), (2, -2)$$

**Solve each system by substitution. Check your answers.**

5. 
$$\begin{cases} y = x^2 + 5x - 2 \\ y = 3x - 2 \end{cases} \quad (-2, -8), (0, -2)$$

6. 
$$\begin{cases} y = -x^2 + x + 12 \\ y = 2x - 8 \end{cases} \quad (-5, -18), (4, 0)$$

7. 
$$\begin{cases} y = x^2 - 2x - 3 \\ y = 2x - 3 \end{cases} \quad (0, -3), (4, 5)$$

8. 
$$\begin{cases} y = 2x^2 - 5x + 6 \\ y = 3x - 2 \end{cases} \quad (2, 4)$$

9. 
$$\begin{cases} y = -x^2 + 2x + 18 \\ y = 5x - 10 \end{cases} \quad (-7, -45), (4, 10)$$

10. 
$$\begin{cases} y = x^2 - 2x - 2 \\ y = -3x + 4 \end{cases} \quad (-3, 13), (2, -2)$$

11. 
$$\begin{cases} x + y = 5 \\ y + 1 = 3x^2 + 2x \end{cases} \quad (-2, 7), (1, 4)$$

12. 
$$\begin{cases} x + y = x^2 - 6 \\ x + y + 2 = 0 \end{cases} \quad (-2, 0), (2, -4)$$

13. 
$$\begin{cases} x = y - 5 \\ x^2 + 2x = y - 3 \end{cases} \quad (-2, 3), (1, 6)$$

14. 
$$\begin{cases} y + 4 = x^2 - 3x \\ y + 9 = 3x \end{cases} \quad (1, -6), (5, 6)$$

15. 
$$\begin{cases} x^2 + y - 10 = 0 \\ x + y + 2 = 0 \end{cases} \quad (-3, 1), (4, -6)$$

16. 
$$\begin{cases} x + y = 7 \\ x^2 - y = -5x \end{cases} \quad (-7, 14), (1, 6)$$

17. 
$$\begin{cases} y + 5x = x^2 - 3 \\ y - 3x = -15 \end{cases} \quad (2, -9), (6, 3)$$

18. 
$$\begin{cases} y - 2x = -x^2 - 4 \\ y + 2x = -1 \end{cases} \quad (1, -3), (3, -7)$$

**Practice** (continued)

Form G

Quadratic Systems

Solve each system.

19.  $\begin{cases} y = -x^2 + 2x - 3 \\ y = x^2 + 4x - 3 \end{cases}$   $(-1, -6), (0, -3)$

20.  $\begin{cases} y = x^2 + 2x - 3 \\ y = -x^2 - 2x + 3 \end{cases}$   $(-3, 0), (1, 0)$

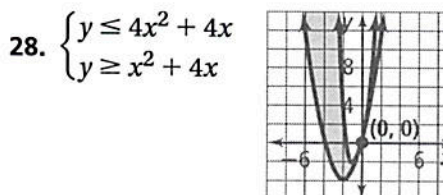
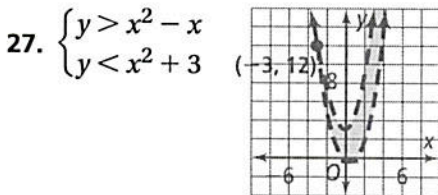
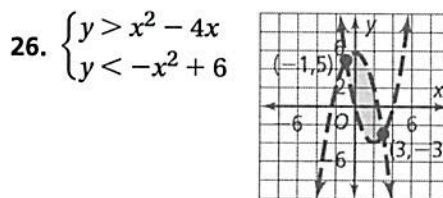
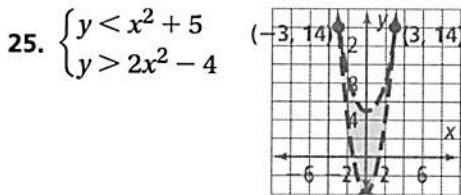
21.  $\begin{cases} y = 2x^2 + x - 5 \\ y = -x^2 - 2x - 5 \end{cases}$   $(-1, -4), (0, -5)$

22.  $\begin{cases} y = -x^2 + x + 2 \\ y = x^2 - 3x - 4 \end{cases}$   $(-1, 0), (3, -4)$

23.  $\begin{cases} y = x^2 + 1 \\ y = 2x^2 - 3 \end{cases}$   $(-2, 5), (2, 5)$

24.  $\begin{cases} y = 2x^2 - 4 \\ y = x^2 - 4x + 1 \end{cases}$   $(-5, 46), (1, -2)$

Solve each system by graphing.



29. In business, a break-even point is the point  $(x, y)$  at which the graphs of the revenue and cost functions intersect. For one manufacturing company, the revenue from producing  $x$  items is given by the function  $y = 2x + 12$  and the cost of producing  $x$  items is given by  $y = -x^2 + 10x + 5$ . Find all break-even points.  $(1, 14), (7, 26)$

30. Two skaters are practicing at the same time on the same rink. One skater follows the path  $y = -2x + 32$ , while the other skater follows the curve  $y = -2x^2 + 18x$ . Find all points where they might collide if they are not careful.  $(2, 28), (8, 16)$