

4-3 Practice

Quadratic Systems

Solve each system by graphing. Check your answers.

1.
$$\begin{cases} y = -x^2 + 3x + 2 \\ y = 3x + 2 \end{cases}$$

2.
$$\begin{cases} y = x^2 + 2x - 3 \\ y = 2x + 1 \end{cases}$$

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

4.
$$\begin{cases} y = 2x^2 - 5x \\ y = -3x + 4 \end{cases}$$

Solve each system by substitution. Check your answers.

5.
$$\begin{cases} y = x^2 + 5x - 2 \\ y = 3x - 2 \end{cases}$$

6.
$$\begin{cases} y = -x^2 + x + 12 \\ y = 2x - 8 \end{cases}$$

7.
$$\begin{cases} y = x^2 - 2x - 3 \\ y = 2x - 3 \end{cases}$$

8.
$$\begin{cases} y = 2x^2 - 5x + 6 \\ y = 3x - 2 \end{cases}$$

9.
$$\begin{cases} y = -x^2 + 2x + 18 \\ y = 5x - 10 \end{cases}$$

10.
$$\begin{cases} y = x^2 - 2x - 2 \\ y = -3x + 4 \end{cases}$$

11.
$$\begin{cases} x + y = 5 \\ y + 1 = 3x^2 + 2x \end{cases}$$

12.
$$\begin{cases} x + y = x^2 - 6 \\ x + y + 2 = 0 \end{cases}$$

13.
$$\begin{cases} x = y - 5 \\ x^2 + 2x = y - 3 \end{cases}$$

14.
$$\begin{cases} y + 4 = x^2 - 3x \\ y + 9 = 3x \end{cases}$$

15.
$$\begin{cases} x^2 + y - 10 = 0 \\ x + y + 2 = 0 \end{cases}$$

16.
$$\begin{cases} x + y = 7 \\ x^2 - y = -5x \end{cases}$$

17.
$$\begin{cases} y + 5x = x^2 - 3 \\ y - 3x = -15 \end{cases}$$

18.
$$\begin{cases} y - 2x = -x^2 - 4 \\ y + 2x = -1 \end{cases}$$

4-3 Practice (continued)

Quadratic Systems

Solve each system.

$$19. \begin{cases} y = -x^2 + 2x - 3 \\ y = x^2 + 4x - 3 \end{cases}$$

$$20. \begin{cases} y = x^2 + 2x - 3 \\ y = -x^2 - 2x + 3 \end{cases}$$

$$21. \begin{cases} y = 2x^2 + x - 5 \\ y = -x^2 - 2x - 5 \end{cases}$$

$$22. \begin{cases} y = -x^2 + x + 2 \\ y = x^2 - 3x - 4 \end{cases}$$

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

$$24. \begin{cases} y = 2x^2 - 4 \\ y = x^2 - 4x + 1 \end{cases}$$

25. 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.

26. 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.