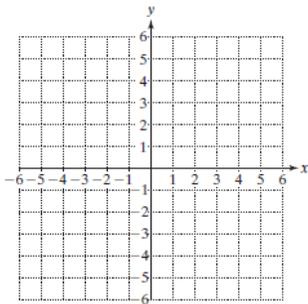# Conics ... Equations and Inequalities
... No Answers

1. Determine the coordinates of the vertex and the equation of the axis of symmetry. Then graph the parabola.
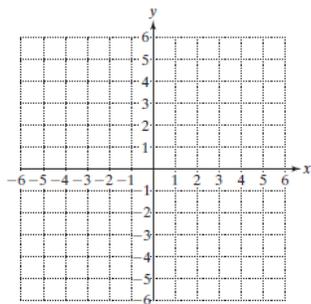
$$x = -(y - 2)^2 + 3$$

2. Determine the coordinates of the center and radius of the circle.

$$\left(x - \frac{5}{6}\right)^2 + \left(y + \frac{1}{3}\right)^2 = \frac{25}{49}$$

3. Write the equation in standard form $y = a(x - h)^2 + k$, and graph the parabola.

$$y = x^2 + 4x + 5$$

4. Use the distance formula to find the distance between the two points $(-5, 19)$ and $(-3, 13)$.

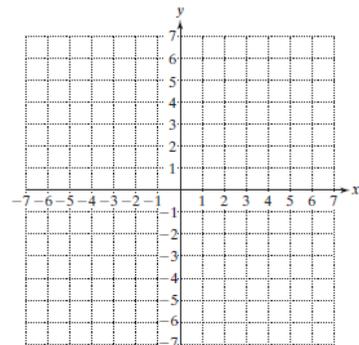**5.** Determine the center and radius of the circle.

$$x^2 + y^2 - 4y - 5 = 0$$

6. Let $(0, 4)$ be the center of a circle that passes through the point $(-2, 5)$.

   a. What is the radius of the circle?

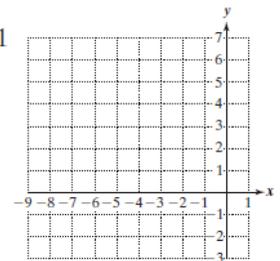   **b.** Write the equation of the circle in standard form.

7. Graph the ellipse.
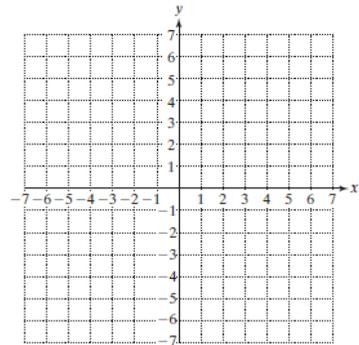
$$\frac{x^2}{16} + \frac{y^2}{49} = 1$$

8. Graph the ellipse.

$$\frac{(x + 4)^2}{25} + (y - 3)^2 = 1$$

9. Graph the hyperbola.

$$y^2 - \frac{x^2}{4} = 1$$

10. Solve the systems and identify the correct graph of the equations.
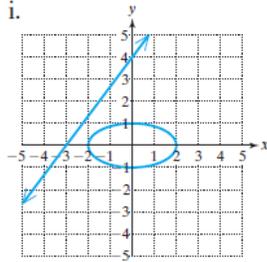
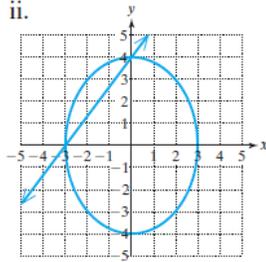**a.** $16x^2 + 9y^2 = 144$

$4x - 3y = -12$

b. $x^2 + 4y^2 = 4$

$4x - 3y = -12$

i.

ii.

11. Describe the circumstances in which a nonlinear system of equations can be solved by using the addition method.
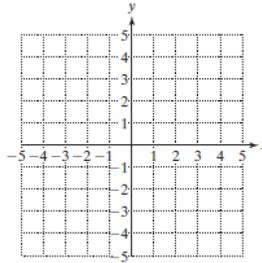
12. Solve the system by using either the substitution method or the addition method.
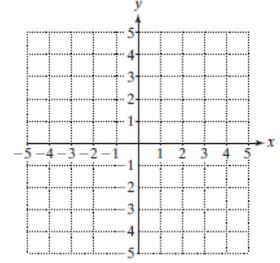
$$25x^2 + 4y^2 = 100$$
$$25x^2 - 4y^2 = 100$$

For Exercises 13–16, graph the solution set.
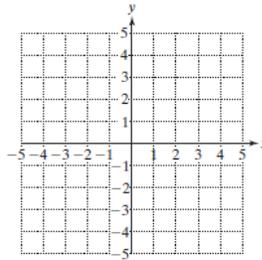
13. $x \le y^2 + 1$

14. $y \ge -\dfrac{1}{3}x + 1$

15. $x < y^2 + 1$

$$y > -\frac{1}{3}x + 1$$

16. $y < \sqrt{x}$

$$y > x - 2$$
$$x > 0$$