

## Chapter 9

**9.1** Find the distance between the two points. Then find the midpoint of the line segment joining the two points.

1.  $(-5, 0), (5, 4)$       2.  $(2, 1), (3, 7)$       3.  $(-12, 12), (14, -4)$       4.  $(12, -1), (18, -9)$

**9.2** Graph the equation. Identify the focus, directrix, and axis of symmetry of the parabola.

5.  $y^2 = 2x$       6.  $x^2 = -4y$       7.  $14x^2 = -21y$       8.  $12y^2 + 3x = 0$

**9.3** Graph the equation. Identify the radius of the circle.

9.  $x^2 + y^2 = 4$       10.  $x^2 + y^2 = 14$       11.  $3x^2 + 3y^2 = 75$       12.  $16x^2 + 16y^2 = 4$

**9.3** Write the standard form of the equation of the circle that passes through the given point and whose center is at the origin.

13.  $(8, 0)$       14.  $(0, -9)$       15.  $(7, -1)$       16.  $(-5, -11)$

**9.4** Graph the equation. Identify the vertices, co-vertices, and foci of the ellipse.

17.  $\frac{x^2}{81} + \frac{y^2}{16} = 1$       18.  $x^2 + \frac{y^2}{9} = 1$       19.  $9x^2 + 4y^2 = 576$       20.  $49x^2 + 64y^2 = 12,544$

**9.4** Write an equation of the ellipse with the given characteristics and center at  $(0, 0)$ .

21. Vertex:  $(4, 0)$   
Co-vertex:  $(0, 2)$       22. Vertex:  $(0, -5)$   
Co-vertex:  $(4, 0)$       23. Vertex:  $(9, 0)$   
Focus:  $(-3, 0)$       24. Co-vertex:  $(0, 10)$   
Focus:  $(8, 0)$

**9.5** Graph the equation. Identify the vertices, foci, and asymptotes of the hyperbola.

25.  $\frac{x^2}{36} - \frac{y^2}{16} = 1$       26.  $x^2 - y^2 = 4$       27.  $49y^2 - 81x^2 = 3969$

**9.5** Write an equation of the hyperbola with the given foci and vertices.

28. Foci:  $(0, -8), (0, 8)$   
Vertices:  $(0, -6), (0, 6)$       29. Foci:  $(-2, 0), (2, 0)$   
Vertices:  $(-1, 0), (1, 0)$       30. Foci:  $(0, -5), (0, 5)$   
Vertices:  $(0, -3\sqrt{2}), (0, 3\sqrt{2})$

**9.6** Graph the equation. Identify the important characteristics of the graph.

31.  $\frac{(x-3)^2}{25} + \frac{y^2}{9} = 1$       32.  $(x+2)^2 + (y-1)^2 = 4$       33.  $(y-4)^2 - \frac{(x+1)^2}{16} = 1$

**9.6** Classify the conic section and write its equation in standard form. Then graph the equation.

34.  $x^2 + y^2 + 2x + 2y - 7 = 0$       35.  $9x^2 + 4y^2 - 72x + 16y + 16 = 0$   
36.  $9x^2 - 4y^2 + 16y - 52 = 0$       37.  $x^2 - 6x - 4y + 17 = 0$

**9.7** Solve the system.

38.  $x^2 + y^2 = 4$   
 $9x^2 - 4y^2 = 36$       39.  $y = x - 2$   
 $x^2 + y^2 - 6x - 4y - 12 = 0$       40.  $y^2 = x - 5$   
 $9x^2 - 25y^2 = 225$