

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. $y^2 = x - 5$
 $9x^2 - 25y^2 = 225$