**Sketch the graph of the equation, and label the x- and y-intercepts.**

1. y = 2x – 3 2. y = -x + 1 3. y = -4x2

  

 4. x = 1/4y2 5. y = 2x2 – 1 6. x = -y2 + 3

  

 7. y = -1/2x3 8. y = x3 – 8 9. y = $\sqrt{x}$

  

**Use tests for symmetry to determine which graphs in the indicated excercises are symmetric with respect to (a) the y-axis, (b) the x-axis, and (c) the origin.**

10. Exercises 1-9

**Sketch the graph of the circle or semi-circle.**

11. x2 + y2 = 11 12. (x+3)2 + (y-2)2 = 9 13. (x+3)2 + y2 = 1  

14. 4x2 + 4y2 = 25 15. y = -$\sqrt{16-x^{2}}$ 16. x = $\sqrt{9-y^{2}}$

  

**Find an equation of the circle that satisfies the stated conditions.**

17. Center C(2, -3), radius 5 18. Center C(1/4, 0), radius $\sqrt{5}$ 19. Center C(-4,6), passing through P(1,2)

20. C(-3,6), tangent to y-axis 21. Tangent to both axes, center in 22. Endpoints of a diameter second quadrant, radius = 4 A(4,-3) and B(3,6)

**Find the center and radius of the circle with the given equation.**

23. x2 + y2 – 4x + 6y – 36 = 0 24. x2 + y2 + 4y – 117 = 0 25. 2x2 + 2y2 – 12x + 4y – 15 = 0

26. x2 + y2 + 4x – 2y + 5 = 0 27. x2 + y2 – 2x – 8y + 19 = 0 28. x2 + y2 – 6x + 4y + 13 = 0

**Find equations for the upper half, lower half, right half, and left half of the circle.**

29. x2 + y2 = 36 30. (x – 2)2 + (y+1)2 = 49

**Determine whether the point P is inside, outside, or on the circle with center C and radius r.**

31. P(2,3), C(4,6), r = 4 32. P(4,2), C(1,-2), r = 5 33. P(-3,5), C(2,1), r = 6

**Find the x-intercepts and the y-intercepts of the circle.**

34. x2 + y2 – 4x – 6y + 4 = 0

35. **Find an equation of the circle that is concentric (has the same center) with x2 + y2 + 4x – 6y + 4 = 0 and passes through P(2,6).**