9.4 EXERCISES

HOMEWORK KEY

= **WORKED-OUT SOLUTIONS** on p. WS1 for Exs. 11, 29, and 49

= **TAKS PRACTICE AND REASONING** Exs. 35, 45, 46, 51, 52, 54, and 55

SKILL PRACTICE

1. **VOCABULARY** Copy and complete: An ellipse is the set of all points P such that the sum of the distances between P and two fixed points, called the ?, is a constant.

2. **WRITING** *Describe* how to find the foci of an ellipse given the coordinates of its vertices and co-vertices.

EXAMPLE 1 on p. 635 for Exs. 3–16

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

3. $\frac{x^2}{16} + \frac{y^2}{4} = 1$

4. $\frac{x^2}{4} + y^2 = 25$

5. $\frac{x^2}{9} + \frac{y^2}{49} = 1$

6. $\frac{x^2}{144} + \frac{y^2}{64} = 1$

7. $\frac{x^2}{400} + \frac{y^2}{81} = 1$

8. $\frac{x^2}{36} + \frac{y^2}{225} = 1$

9. $4x^2 + y^2 = 36$

10. $9x^2 + y^2 = 9$

11. $16x^2 + 9y^2 = 144$

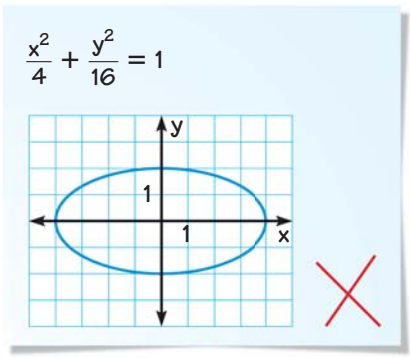
12. $25x^2 + 49y^2 = 1225$

13. $16x^2 + 25y^2 = 1600$

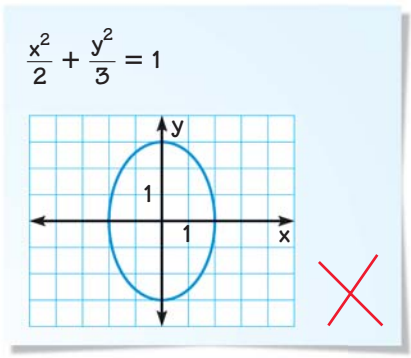
14. $72x^2 + 8y^2 = 648$

ERROR ANALYSIS ***Describe*** **and correct the error in graphing the ellipse.**

15.



16.



EXAMPLES 2 and 4 on pp. 635–636 for Exs. 17–35

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

17. Vertex: (5, 0)
Co-vertex: (0, −3)

18. Vertex: (0, −10)
Co-vertex: (6, 0)

19. Vertex: (14, 0)
Co-vertex: (0, −9)

20. Vertex: (0, −6)
Co-vertex: (4, 0)

21. Vertex: (0, 12)
Co-vertex: (11, 0)

22. Vertex: (20, 0)
Co-vertex: (0, −16)

23. Vertex: (0, 8)
Focus: (0, 6)

24. Vertex: (4, 0)
Focus: $(\sqrt{7}, 0)$

25. Vertex: (0, 9)
Focus: $(0, -4\sqrt{2})$

26. Vertex: (−5, 0)
Focus: (3, 0)

27. Vertex: (0, −4)
Focus: $(0, -2\sqrt{3})$

28. Vertex: (13, 0)
Focus: $(-4\sqrt{3}, 0)$

29. Co-vertex: $(0, \sqrt{7})$
Focus: (−3, 0)

30. Co-vertex: $(-3\sqrt{5}, 0)$
Focus: (0, 6)

31. Co-vertex: $(0, -5\sqrt{7})$
Focus: (−15, 0)

32. Co-vertex: (0, 15)
Focus: (−8, 0)

33. Co-vertex: $(2\sqrt{15}, 0)$
Focus: (0, 14)

34. Co-vertex: (−32, 0)
Focus: (0, 24)