9.5 EXERCISES

HOMEWORK KEY

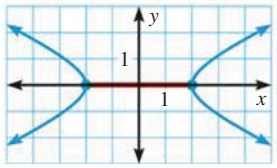
= **WORKED-OUT SOLUTIONS** on p. WS1 for Exs. 13, 23, and 41

= **TAKS PRACTICE AND REASONING** Exs. 15, 26, 33, 35, 43, 45, and 46

= **MULTIPLE REPRESENTATIONS** Ex. 42

SKILL PRACTICE

1. **VOCABULARY** Copy and complete: The points $(-2, 0)$ and $(2, 0)$ in the graph at the right are the ? of the hyperbola. The line segment joining these two points is the ? .



2. **WRITING** *Compare* the definitions of an ellipse and a hyperbola.

EXAMPLE 1 on p. 643 for Exs. 3–17

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

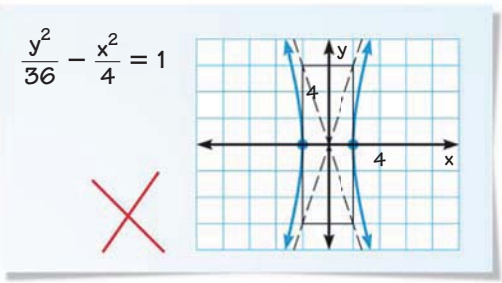
3. $\frac{x^2}{25} - \frac{y^2}{4} = 1$
4. $\frac{x^2}{9} - \frac{y^2}{36} = 1$
5. $\frac{y^2}{81} - \frac{x^2}{25} = 1$
6. $\frac{x^2}{144} - \frac{y^2}{36} = 1$
7. $\frac{y^2}{196} - \frac{x^2}{100} = 1$
8. $\frac{y^2}{49} - \frac{x^2}{121} = 1$
9. $4x^2 - y^2 = 256$
10. $49x^2 - 4y^2 = 196$
11. $9y^2 - 25x^2 = 225$
12. $25y^2 - 64x^2 = 1600$
13. $81x^2 - 16y^2 = 1296$
14. $49y^2 - 100x^2 = 4900$

15. **TAKS REASONING** What are the foci of the hyperbola with equation $45y^2 - 200x^2 = 1800$?

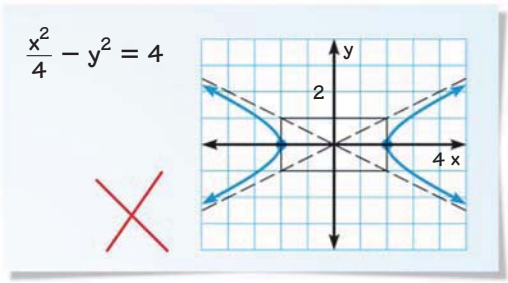
Ⓐ $(\pm 2\sqrt{10}, 0)$ Ⓑ $(0, \pm 2\sqrt{10})$ Ⓒ $(\pm 7, 0)$ Ⓓ $(0, \pm 7)$

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

16. $\frac{y^2}{36} - \frac{x^2}{4} = 1$



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



EXAMPLE 2 on p. 643 for Exs. 18–26

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

18. Foci: $(0, -4)$, $(0, 4)$
Vertices: $(0, -2)$, $(0, 2)$

19. Foci: $(-6, 0)$, $(6, 0)$
Vertices: $(-2, 0)$, $(2, 0)$

20. Foci: $(-5, 0)$, $(5, 0)$
Vertices: $(-1, 0)$, $(1, 0)$

21. Foci: $(0, -12)$, $(0, 12)$
Vertices: $(0, -7)$, $(0, 7)$

22. Foci: $(-10, 0)$, $(10, 0)$
Vertices: $(-5\sqrt{3}, 0)$, $(5\sqrt{3}, 0)$

23. Foci: $(0, -4\sqrt{5})$, $(0, 4\sqrt{5})$
Vertices: $(0, -4)$, $(0, 4)$

24. Foci: $(0, -3)$, $(0, 3)$
Vertices: $(0, -2\sqrt{2})$, $(0, 2\sqrt{2})$

25. Foci: $(-3\sqrt{6}, 0)$, $(3\sqrt{6}, 0)$
Vertices: $(-2, 0)$, $(2, 0)$