13.4 EXERCISES

HOMEWORK KEY

○ = **WORKED-OUT SOLUTIONS** on p. WS1 for Exs. 7, 23, and 37

= **TAKS PRACTICE AND REASONING** Exs. 11, 30, 31, 37, 38, 41, and 42

SKILL PRACTICE

1. VOCABULARY Copy and complete: The ___?___ sine of $\frac{1}{2}$ is $\frac{\pi}{6}$, or 30°.

2. WRITING *Explain* why $\tan^{-1} 3$ is defined, but $\cos^{-1} 3$ is undefined.

EXAMPLE 1 on p. 876 for Exs. 3–11

EVALUATING EXPRESSIONS **Evaluate the expression without using a calculator. Give your answer in both radians and degrees.**

3. $\sin^{-1} 1$ **4.** $\tan^{-1}(-1)$ **5.** $\cos^{-1} 0$ **6.** $\cos^{-1}(-2)$

7. $\sin^{-1}\frac{\sqrt{3}}{2}$ **8.** $\sin^{-1}\frac{1}{2}$ **9.** $\tan^{-1}\left(-\frac{\sqrt{3}}{3}\right)$ **10.** $\cos^{-1}\left(-\frac{1}{2}\right)$

11. TAKS REASONING What is the value of the expression $\cos^{-1}\frac{\sqrt{2}}{2}$?

Ⓐ 0° Ⓑ 30° Ⓒ 45° Ⓓ 60°

USING A CALCULATOR **Use a calculator to evaluate the expression in both radians and degrees.**

12. $\sin^{-1} 0.18$ **13.** $\tan^{-1} 2.6$ **14.** $\cos^{-1} 0.36$ **15.** $\cos^{-1}(-0.4)$

16. $\tan^{-1}(-0.75)$ **17.** $\sin^{-1}(-0.2)$ **18.** $\sin^{-1} 0.8$ **19.** $\cos^{-1} 0.99$

EXAMPLE 2 on p. 876 for Exs. 20–26

SOLVING EQUATIONS **Solve the equation for θ.**

20. $\cos\theta = -0.82;\ 180° < \theta < 270°$ **21.** $\sin\theta = -0.45;\ 180° < \theta < 270°$

22. $\sin\theta = 0.15;\ 90° < \theta < 180°$ **23.** $\tan\theta = 3.2;\ 180° < \theta < 270°$

24. $\tan\theta = -5.3;\ 90° < \theta < 180°$ **25.** $\cos\theta = 0.25;\ 270° < \theta < 360°$

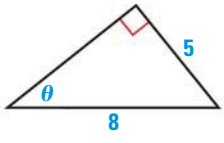
26. ERROR ANALYSIS *Describe* and correct the error in solving the equation $\sin\theta = 0.7$ where $90° < \theta < 180°$.

> The angle whose sine is 0.7 is $\sin^{-1} 0.7 \approx 44.4°$, so $\theta \approx 44.4°$. ✗

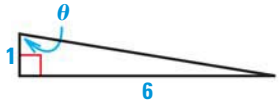
EXAMPLE 3 on p. 877 for Exs. 27–29

FINDING ANGLES **Find the measure of the angle θ.**

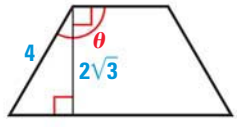
27.



28.



29.



30. TAKS REASONING Suppose $\cos\theta > 0$ and $\sin\theta < 0$. Give a possible value of θ such that $-360° \le \theta \le 0°$.

31. TAKS REASONING Suppose $\sin\theta < 0$ and $\tan\theta > 0$. Give a possible value of θ such that $360° \le \theta \le 720°$.

CHALLENGE **Rewrite the expression so that it does not involve trigonometric functions or inverse trigonometric functions.**

32. $\csc(\sin^{-1} x)$ **33.** $\cot(\tan^{-1} x)$ **34.** $\sec(\cos^{-1} x)$