

**LESSON
9.3****Practice B***For use with the lesson "Evaluate Trigonometric Functions of Any Angle"*

Use the given point on the terminal side of an angle θ in standard position to evaluate the six trigonometric functions of θ .

1. $(8, -15)$

2. $(-7, -2)$

Evaluate the six trigonometric functions of θ .

3. $\theta = 90^\circ$

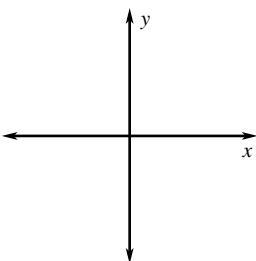
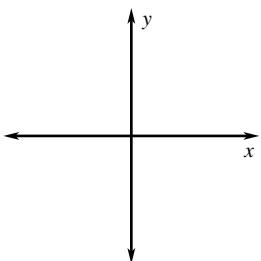
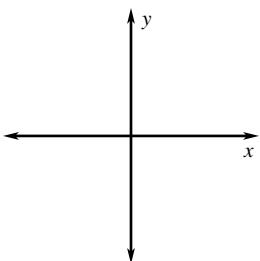
4. $\theta = -\pi$

Sketch the angle. Then find its reference angle.

5. -115°

6. 125°

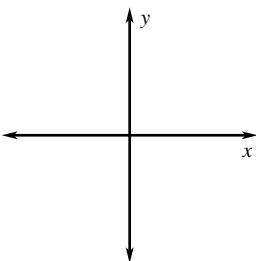
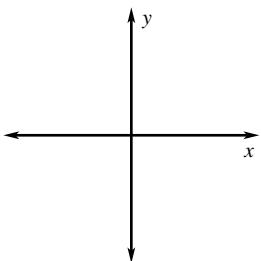
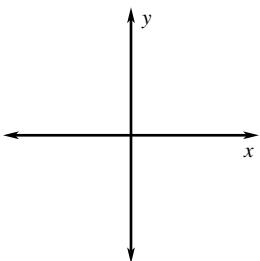
7. 325°



8. $-\frac{17\pi}{6}$

9. $-\frac{7\pi}{4}$

10. $\frac{11\pi}{3}$



Evaluate the function without using a calculator.

11. $\sin 240^\circ$

12. $\tan 150^\circ$

13. $\sec(-315^\circ)$

14. $\cot(-150^\circ)$

15. $\cos\left(-\frac{3\pi}{4}\right)$

16. $\csc \frac{7\pi}{6}$

17. $\tan \frac{8\pi}{3}$

18. $\sin\left(-\frac{5\pi}{6}\right)$

19. **Distance** A projectile is launched with an initial speed of 42 feet per second. It is projected at an angle of 50° . How far does the projectile travel? How much farther does it travel if it is launched with an initial speed of 84 feet per second?

20. **Baseball** A baseball player hits a ball projected at an angle of 40° . The height at which the ball is hit is the same as the height of the fence. At what speed must the baseball player hit the ball in order for it to clear a fence that is 385 feet away?

Lesson 9.3 Evaluate Trigonometric Functions of Any Angle

Teaching Guide

1. about 366.9 ft **2.** about 407.5 ft

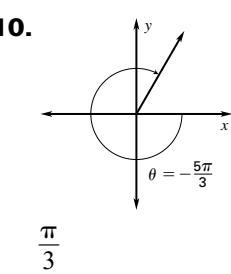
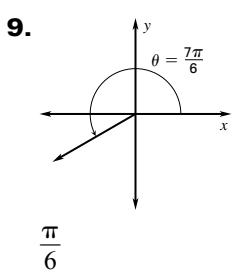
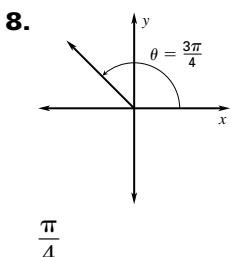
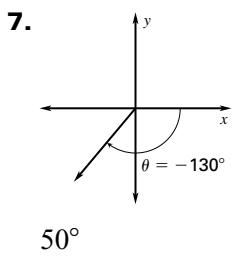
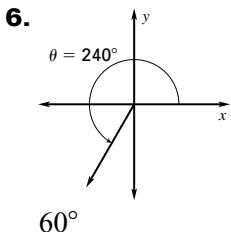
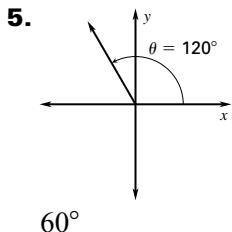
3. your friend; about 40.6 ft

Investigating Algebra Activity

- 1.** $\sin \theta = \frac{y}{r}$, $\cos \theta = \frac{x}{r}$, $\tan \theta = \frac{y}{x}$, $\csc \theta = \frac{r}{y}$,
 $\sec \theta = \frac{r}{x}$, $\cot \theta = \frac{x}{y}$ **2.** $\sin \theta = \frac{1}{2}$, $\cos \theta = \frac{\sqrt{3}}{2}$,
 $\tan \theta = \frac{\sqrt{3}}{3}$, $\csc \theta = 2$, $\sec \theta = \frac{2\sqrt{3}}{3}$, $\cot \theta = \sqrt{3}$
3. A; Answers will vary.

Practice Level A

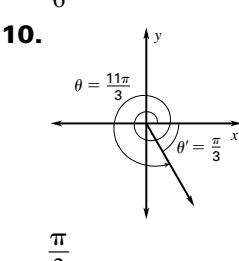
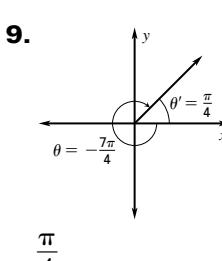
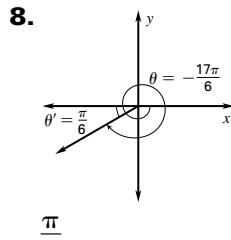
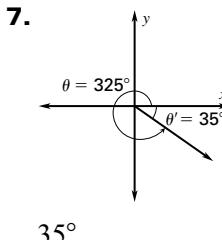
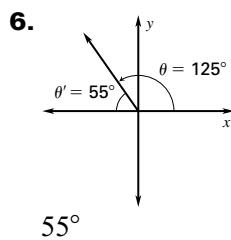
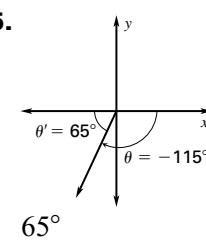
- 1.** $\sin \theta = \frac{4}{5}$, $\cos \theta = \frac{3}{5}$, $\tan \theta = \frac{4}{3}$, $\csc \theta = \frac{5}{4}$,
 $\sec \theta = \frac{5}{3}$, $\cot \theta = \frac{3}{4}$ **2.** $\sin \theta = \frac{2\sqrt{13}}{13}$,
 $\cos \theta = -\frac{3\sqrt{13}}{13}$, $\tan \theta = -\frac{2}{3}$, $\csc \theta = \frac{\sqrt{13}}{2}$,
 $\sec \theta = -\frac{\sqrt{13}}{3}$, $\cot \theta = -\frac{3}{2}$ **3.** $\sin \theta = 1$,
 $\cos \theta = 0$, $\tan \theta$ is undefined, $\csc \theta = 1$,
 $\sec \theta$ is undefined, $\cot \theta = 0$ **4.** $\sin \theta = 0$,
 $\cos \theta = -1$, $\tan \theta = 0$, $\csc \theta$ is undefined,
 $\sec \theta = -1$, $\cot \theta$ is undefined



- 11.** $\frac{\sqrt{3}}{2}$ **12.** $\frac{\sqrt{3}}{3}$ **13.** $\frac{\sqrt{2}}{2}$ **14.** $-\frac{\sqrt{3}}{3}$ **15.** $-\frac{1}{2}$
16. 2 **17.** -2 **18.** $-\frac{1}{2}$ **19.** 32 ft **20.** no

Practice Level B

- 1.** $\sin \theta = -\frac{15}{17}$, $\cos \theta = \frac{8}{17}$, $\tan \theta = -\frac{15}{8}$,
 $\csc \theta = -\frac{17}{15}$, $\sec \theta = \frac{17}{8}$, $\cot \theta = -\frac{8}{15}$
2. $\sin \theta = -\frac{2\sqrt{53}}{53}$, $\cos \theta = -\frac{7\sqrt{53}}{53}$,
 $\tan \theta = \frac{2}{7}$, $\csc \theta = -\frac{\sqrt{53}}{2}$, $\sec \theta = -\frac{\sqrt{53}}{7}$,
 $\cot \theta = \frac{7}{2}$ **3.** $\sin \theta = 1$, $\cos \theta = 0$, $\tan \theta$ is undefined, $\csc \theta = 1$,
 $\sec \theta$ is undefined, $\cot \theta = 0$ **4.** $\sin \theta = 0$, $\cos \theta = -1$, $\tan \theta = 0$, $\csc \theta$ is undefined, $\sec \theta = -1$, $\cot \theta$ is undefined



- 11.** $-\frac{\sqrt{3}}{2}$ **12.** $-\frac{\sqrt{3}}{3}$ **13.** $\sqrt{2}$ **14.** $\sqrt{3}$
15. $-\frac{\sqrt{2}}{2}$ **16.** -2 **17.** $-\sqrt{3}$ **18.** $-\frac{1}{2}$

- 19.** about 54.3 ft, about 163 ft
20. about 112 ft/sec

Practice Level C

- 1.** $\sin \theta = -\frac{5\sqrt{74}}{74}$, $\cos \theta = -\frac{7\sqrt{74}}{74}$, $\tan \theta = \frac{5}{7}$,
 $\csc \theta = -\frac{\sqrt{74}}{5}$, $\sec \theta = -\frac{\sqrt{74}}{7}$, $\cot \theta = \frac{7}{5}$