

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

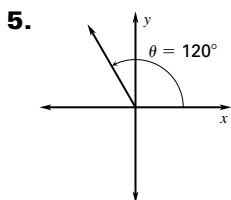
Investigating Algebra Activity

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. $\sin \theta = \frac{1}{2}$, $\cos \theta = \frac{\sqrt{3}}{2}$,
 $\tan \theta = \frac{\sqrt{3}}{3}$, $\csc \theta = 2$, $\sec \theta = \frac{2\sqrt{3}}{3}$, $\cot \theta = \sqrt{3}$

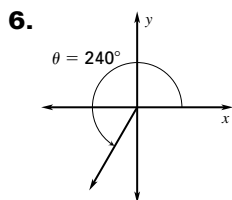
3. A; Answers will vary.

Practice Level A

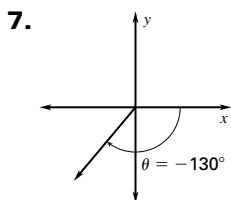
1. $\sin \theta = \frac{4}{5}$, $\cos \theta = \frac{3}{5}$, $\tan \theta = \frac{4}{3}$, $\csc \theta = \frac{5}{4}$,
 $\sec \theta = \frac{5}{3}$, $\cot \theta = \frac{3}{4}$ 2. $\sin \theta = \frac{2\sqrt{13}}{13}$,
 $\cos \theta = -\frac{3\sqrt{13}}{13}$, $\tan \theta = -\frac{2}{3}$, $\csc \theta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



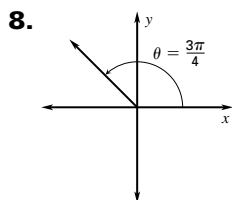
60°



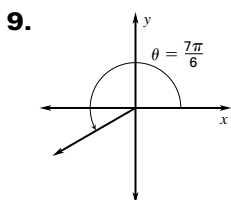
60°



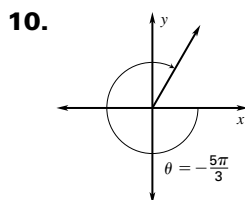
50°



$\frac{\pi}{4}$



$\frac{\pi}{6}$

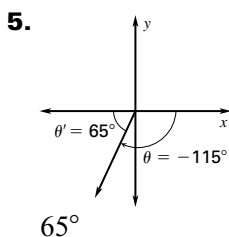


$\frac{\pi}{3}$

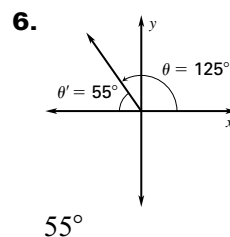
11. $\frac{\sqrt{3}}{2}$ 12. $\frac{\sqrt{3}}{3}$ 13. $\frac{\sqrt{2}}{2}$ 14. $-\frac{\sqrt{3}}{3}$ 15. $-\frac{1}{2}$
 16. 2 17. -2 18. $-\frac{1}{2}$ 19. 32 ft 20. no

Practice Level B

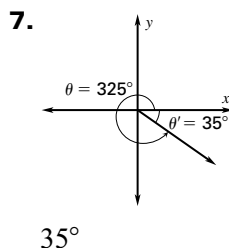
1. $\sin \theta = -\frac{15}{17}$, $\cos \theta = \frac{8}{17}$, $\tan \theta = -\frac{15}{8}$,
 $\csc \theta = -\frac{17}{15}$, $\sec \theta = \frac{17}{8}$, $\cot \theta = -\frac{8}{15}$
 2. $\sin \theta = -\frac{2\sqrt{53}}{53}$, $\cos \theta = -\frac{7\sqrt{53}}{53}$,
 $\tan \theta = \frac{2}{7}$,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



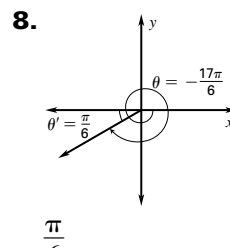
65°



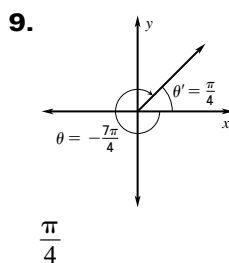
55°



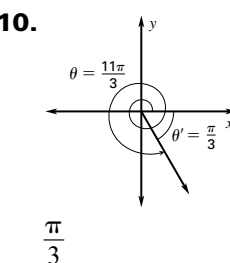
35°



$\frac{\pi}{6}$



$\frac{\pi}{4}$



$\frac{\pi}{3}$

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