

LESSON
10-3**Practice A**
The Unit Circle**Convert each measure from degrees to radians or from radians to degrees.**

1. 60°

$60^\circ \left(\frac{\pi \text{ radians}}{180^\circ} \right) = \underline{\hspace{2cm}}$

2. $-\frac{2\pi}{5}$

$\left(-\frac{2\pi}{5} \right) \left(\frac{180^\circ}{\pi \text{ radians}} \right) = \underline{\hspace{2cm}}$

3. $\frac{5\pi}{6}$

4. 315°

5. $-\frac{3\pi}{6}$

6. -105°

7. $\frac{4\pi}{3}$

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

9. 300°

10. -10°

11. $\frac{16\pi}{9}$

Find the exact value of each trigonometric function. Use the unit circle.

12. $\sin 60^\circ$

a. At what point on the unit circle does the angle terminate? _____

b. Use $\sin \theta = y$. _____

13. $\cos \frac{5\pi}{3}$

14. $\tan 225^\circ$

15. $\tan \pi$

16. $\sin 330^\circ$

17. $\cos 150^\circ$

18. $\tan 240^\circ$

Solve.

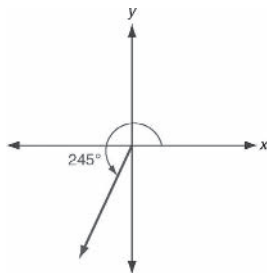
19. John is adding a curved edge to the landscaping in front of the high school. The curve is an arc of a circle with a radius of 1600 feet.

The central angle that intercepts the curve measures $\frac{\pi}{8}$ radians.

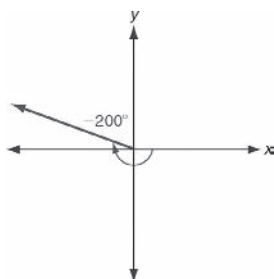
Find the length of the curve to the nearest foot.

Reading Strategies

- Possible answer: The angle is positive and measures between 180° and 270° .
- Possible answer: The angle is negative and measures between -270° and -360° .
- a.



- -115°
 - 65°
4. a.



- 160°
 - 20°
- Yes; because you can find coterminal angles by either adding 360° to or subtracting 360° from the measure of the angle
 - Yes; because by definition, reference angles are the measure of the positive acute angle made by the terminal side of an angle and the x-axis.

10-3 THE UNIT CIRCLE

Practice A

- $\frac{\pi}{3}$ radians
- -72°
- 150°
- $\frac{7\pi}{4}$ radians
- -135°
- $-\frac{7\pi}{12}$ radians
- 240°
- -30°
- $\frac{5\pi}{3}$ radians
- $-\frac{\pi}{18}$ radians

- 320°
- a. $\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$ b. $\frac{\sqrt{3}}{2}$
- $\frac{1}{2}$
- 1
- 0
- $-\frac{1}{2}$
- $-\frac{\sqrt{3}}{2}$
- $\sqrt{3}$
- 628 ft

Practice B

- 75°
- $\frac{43\pi}{36}$ radians
- -290°
- $-\pi$ radians
- 300°
- 210°
- $\frac{20\pi}{9}$ radians
- 54°
- $\frac{7\pi}{36}$ radians
- $-\frac{1}{2}$
- 1
- $-\frac{\sqrt{3}}{3}$
- $-\frac{\sqrt{2}}{2}$
- $\frac{1}{2}; -\frac{\sqrt{3}}{2}; -\frac{\sqrt{3}}{3}$
- $\frac{\sqrt{3}}{2}; \frac{1}{2}; \sqrt{3}$
- $-\frac{\sqrt{3}}{2}; \frac{1}{2}; \sqrt{3}$
- $-\frac{\sqrt{2}}{2}; -\frac{\sqrt{2}}{2}; 1$
- 2073 mi

Practice C

- -270°
- $\frac{5\pi}{2}$ radians
- 50°
- $-\frac{10\pi}{9}$ radians
- 315°
- -330°
- $\frac{35\pi}{18}$ radians
- 63°