Precalculus Worksheet #1 Chapter 5 Selected Solutions

Convert each radian measure to degree measure.

3. $\frac{7\pi}{4} = 315^\circ$

$$\left(\frac{7\pi}{4}\right)\left(\frac{180^\circ}{\pi}\right)$$

Convert each degree measure to radian measure

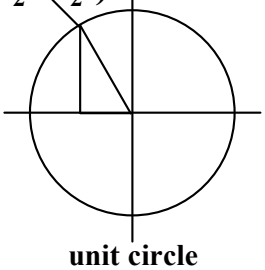
7. $120^\circ = \frac{2\pi}{3}$

$$\left(\frac{120^\circ}{1}\right)\left(\frac{\pi}{180^\circ}\right)$$

Find the exact values of each of the following.

10. $\cos\frac{2\pi}{3} = \frac{-1}{2}$

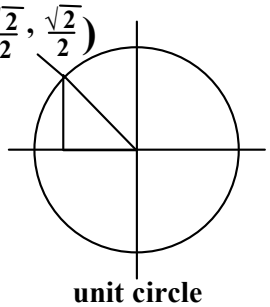
$\left(\frac{-1}{2}, \frac{\sqrt{3}}{2}\right)$



unit circle

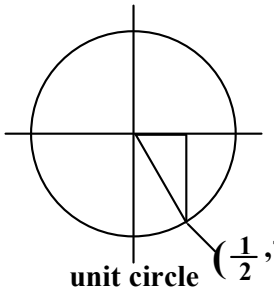
12. $\cot\frac{3\pi}{4} = -1$

$\left(\frac{-\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$



unit circle

14. $\csc\frac{-\pi}{3} = \frac{-2\sqrt{3}}{3}$



unit circle $\left(\frac{1}{2}, \frac{-\sqrt{3}}{2}\right)$

Solve each of the following problems.

27. The second hand of a kitchen clock is 4 inches long. How fast is the tip of the second hand moving?

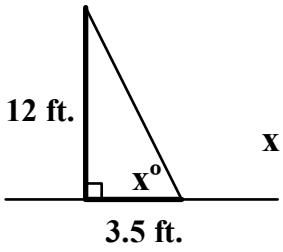
The radius is 4 inches.

$C = 2\pi r = 8\pi$ inches

Since the second hand makes 1 revolution each minute, the tip moves 8π inches in 60 seconds.

It is moving at about 0.419 inches per second.

33. A vertical post which is 12 feet tall casts a shadow on level ground. If the shadow is 3.5 feet long, then what is the angle of elevation to the sun?



$\tan x = \frac{12}{3.5}$

$x = \tan^{-1}\left(\frac{12}{3.5}\right) \approx 73.7^\circ$

The angle is about 73.7 degrees.