3 Find the Exact Values of the Trigonometric Functions of  $\frac{\pi}{4} = 45^{\circ}$ 

Finding the Exact Values of the Trigonometric

Functions of  $\frac{\pi}{4} = 45^{\circ}$ 

Find the exact values of the six trigonometric functions of  $\frac{\pi}{4} = 45^{\circ}$ .

## EXAMPLE

## Finding the Exact Value of a Trigonometric Expression

(b) 
$$\left(\sec\frac{\pi}{4}\right)\left(\cot\frac{\pi}{4}\right)$$

4 Find the Exact Values of the Trigonometric Functions

of 
$$\frac{\pi}{6}$$
 = 30° and  $\frac{\pi}{3}$  = 60°

**EXAMPLE** Finding the Exact Values of the Trigonometric Functions of  $\frac{\pi}{3} = 60^{\circ}$ 

Find the exact values of the six trigonometric functions of  $\frac{\pi}{3} = 60^{\circ}$ .

## Finding the Exact Values of the Trigonometric Functions of $\frac{\pi}{6} = 30^{\circ}$

Find the exact values of the trigonometric functions of  $\frac{\pi}{6} = 30^{\circ}$ .

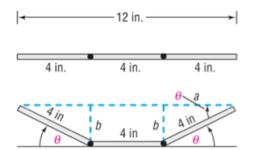
$\theta$ (Radians)	$\theta$ (Degrees)	$\sin \theta$	$\cos \theta$	$\tan  heta$	$\csc \theta$	$\sec \theta$	$\cot \theta$
$\frac{\pi}{6}$	30°	1/2	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$	2	$\frac{2\sqrt{3}}{3}$	$\sqrt{3}$
$\frac{\pi}{4}$	45°	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	1	$\sqrt{2}$	$\sqrt{2}$	1
$\frac{\pi}{3}$	60°	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$	$\frac{2\sqrt{3}}{3}$	2	$\frac{\sqrt{3}}{3}$

## **EXAMPLE** Constructing a Rain Gutter

A rain gutter is to be constructed of aluminum sheets 12 inches wide. After marking off a length of 4 inches from each edge, this length is bent up at an angle  $\theta$ . See Figure 27. The area A of the opening may be expressed as a function of  $\theta$  as

$$A(\theta) = 16\sin\theta(\cos\theta + 1)$$

Find the area A of the opening for  $\theta = 30^{\circ}$ ,  $\theta = 45^{\circ}$ , and  $\theta = 60^{\circ}$ .



	- 1
	- 1
	- 1
	- 1
	- 1