

The use of symmetry also provides information about certain integral multiples of the angles $\frac{\pi}{6} = 30^\circ$ and $\frac{\pi}{3} = 60^\circ$. See Figures 30 and 31.

Figure 30

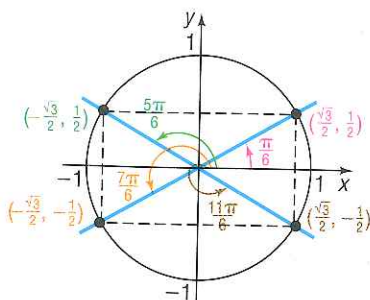
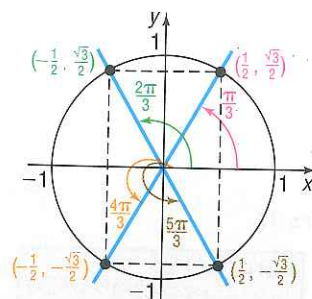



Figure 31

**EXAMPLE 10****Using Figures 30 and 31**

Based on Figures 30 and 31, we see that

$$(a) \cos 210^\circ = -\frac{\sqrt{3}}{2} \quad (b) \sin(-60^\circ) = -\frac{\sqrt{3}}{2} \quad (c) \tan \frac{5\pi}{3} = \frac{-\sqrt{3}}{\frac{1}{2}} = -\sqrt{3}$$

 NOW WORK PROBLEM 49.

Using a Calculator to Find Values of Trigonometric Functions

- 6** Before getting started, you must first decide whether to enter the angle in the calculator using radians or degrees and then set the calculator to the correct MODE.* Check your instruction manual to find out how your calculator handles degrees and radians. Your calculator has keys marked $\boxed{\sin}$, $\boxed{\cos}$, and $\boxed{\tan}$. To find the values of the remaining three trigonometric functions, secant, cosecant, and cotangent, we use the fact that, if $P = (x, y)$ is a point on the unit circle on the terminal side of θ , then

$$\sec \theta = \frac{1}{x} = \frac{1}{\cos \theta} \quad \csc \theta = \frac{1}{y} = \frac{1}{\sin \theta} \quad \cot \theta = \frac{x}{y} = \frac{1}{\frac{y}{x}} = \frac{1}{\tan \theta}$$

EXAMPLE 11**Using a Calculator to Approximate the Value of a Trigonometric Function**

Use a calculator to find the approximate value of:

$$(a) \cos 48^\circ \quad (b) \csc 21^\circ \quad (c) \tan \frac{\pi}{12}$$

Express your answers rounded to two decimal places.

*If your calculator does not display the MODE, you can determine the current mode by evaluating $\boxed{\sin} \boxed{30}$. If you are in the degree mode, the display will show $\boxed{0.5}$ ($\sin 30^\circ = 0.5$). If you are in the radian mode, the display will show $\boxed{-0.9880316}$.