

Section 13-8: The Reciprocal Trig Functions

Cotangent: $\text{Cot}\theta = \frac{1}{\text{Tan}\theta} = \frac{x}{y} = \frac{\text{Cos}\theta}{\text{Sin}\theta}$

Secant: $\text{sec}\theta = \frac{1}{\text{cos}\theta} = \frac{1}{x}$

Cosecant: $\text{csc}\theta = \frac{1}{\text{sin}\theta} = \frac{1}{y}$

Use your calculator to find the value of each to the nearest hundredth.

$\text{Cos}(131^\circ) = -0.66$

$\text{Tan} \frac{8\pi}{27} = 1.34$

$\text{Csc}(-75^\circ) = -1.04$
 $= \frac{1}{\text{Sin}(-75^\circ)}$

$\text{Cot} \frac{-4\pi}{13} = -0.69$
 $= \frac{1}{\text{Tan} \left(\frac{-4\pi}{13} \right)}$

$\text{Sec} 14 = 7.31$
 radians
 $= \frac{1}{\text{Cos} 14}$

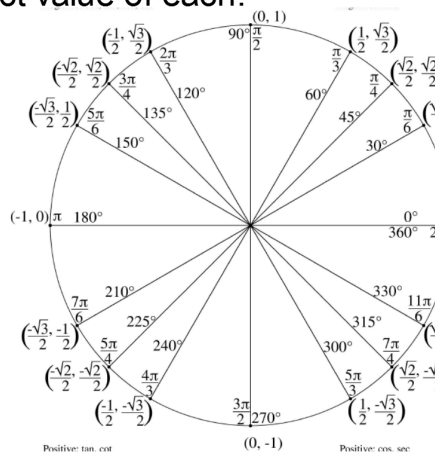
Use the Unit Circle to find the exact value of each.

1. $\text{Sec} 60^\circ = \frac{1}{x} = \frac{1}{\frac{1}{2}} = 2$

2. $\text{Csc} \frac{7\pi}{4} = \frac{1}{y} = \frac{1}{-\frac{\sqrt{2}}{2}} = -\frac{2}{\frac{\sqrt{2}}{\sqrt{2}}} = -\frac{2\sqrt{2}}{2} = -\sqrt{2}$

3. $\text{Cot} 16\pi = \frac{x}{y} = \frac{1}{0}$

Undefined

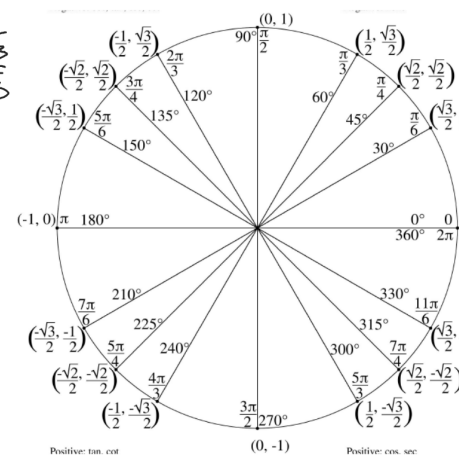


Use the Unit Circle to find the exact value of each.

4. $\text{Sec} \left(\frac{-17\pi}{6} \right) = \frac{1}{x} = -\frac{1}{\frac{\sqrt{3}}{2}} = -\frac{2}{\frac{\sqrt{3}}{\sqrt{3}}} = -\frac{2\sqrt{3}}{\sqrt{3}} = -\frac{2\sqrt{3}}{1} = -2\sqrt{3}$

5. $\text{Csc} 1620^\circ$
 $\text{Csc}(180^\circ) = \frac{1}{y} = \frac{1}{0}$
 = undefined

6. $\text{Cot} \frac{29\pi}{3} = \frac{x}{y} = \frac{\frac{1}{2}}{-\frac{\sqrt{3}}{2}} = -\frac{1}{\frac{\sqrt{3}}{\sqrt{3}}} = -\frac{1\sqrt{3}}{\sqrt{3}} = -\frac{\sqrt{3}}{1} = -\sqrt{3}$



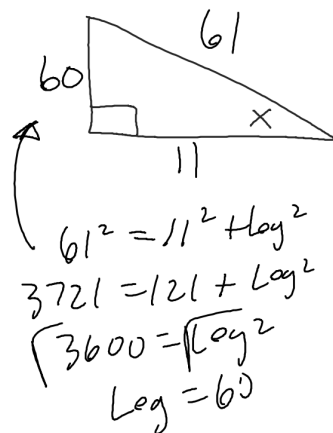
Given that $\cos x = \frac{11}{61} = \frac{\text{Adjacent Leg}}{\text{Hypotenuse}}$

Evaluate the other five trig functions.

$$\sin x = \frac{60}{61} \quad \tan x = \frac{60}{11}$$

$$\csc x = \frac{61}{60} \quad \sec x = \frac{61}{11}$$

$$\cot x = \frac{11}{60}$$



Given that $\cot x = \frac{9}{5} = \frac{x}{y} = \frac{\text{Adjacent Leg}}{\text{Opposite Leg}}$

Evaluate the other five trig functions. Rationalize all denominators as needed.

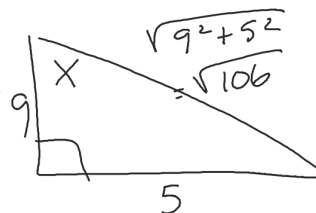
$$\sin x = \frac{5}{\sqrt{106}} = \frac{5\sqrt{106}}{106}$$

$$\cos x = \frac{9}{\sqrt{106}} = \frac{9\sqrt{106}}{106}$$

$$\tan x = \frac{5}{9}$$

$$\sec x = \frac{\sqrt{106}}{9}$$

$$\csc x = \frac{\sqrt{106}}{5}$$



You can now finish Hwk #36 Sec 13-8

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AND

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