Sec 13-8 Reciprocal Trig Functions

Secant Cosecant Cotangent

Secant: $\text{Sec}\theta = \frac{1}{\text{Cos}\theta} = \frac{\text{Hypot}}{\text{Adj. Leg}}$

Cosecant: $\text{Csc}\theta = \frac{1}{\text{Sin}\theta} = \frac{\text{Hypot}}{\text{Opp. Leg}}$

Cotangent: $\text{Cot}\theta = \frac{1}{\text{Tan}\theta} = \frac{\text{Adj. Leg}}{\text{Opp. Leg}}$

Find the value of each to the nearest hundredth.

Sec $55^\circ = 1.74$ $\quad \frac{1}{\cos 55}$

Csc 1.9 $= 1.06$ $\quad \frac{1}{\sin(1.9)}$

Cot $\frac{7\pi}{5}$ $\quad \frac{1}{\tan(7\pi/5)}$ 0.32

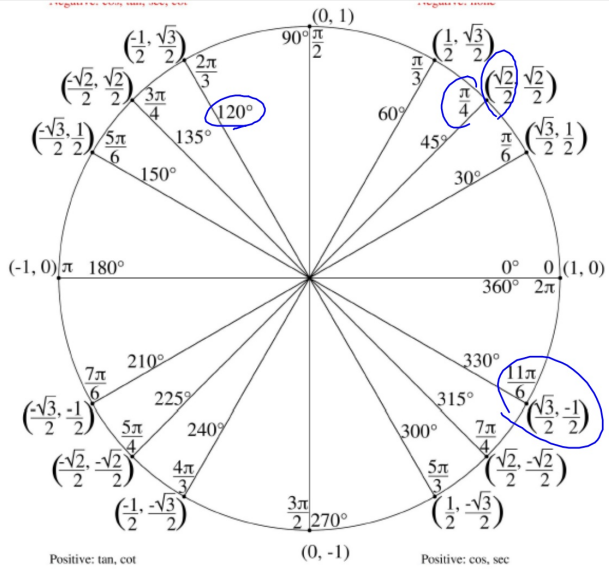
Find the exact value of each using the Unit Circle

Sec $\frac{\pi}{4} = \frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{2\sqrt{2}}{2} = \sqrt{2}$

Csc $120^\circ = \frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$

Cot $\frac{11\pi}{6}$

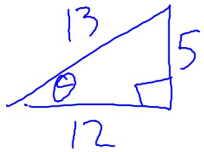
$\text{Tan}\theta = \frac{y}{x}$ $\quad \text{Cot}\theta = \frac{x}{y}$ $\quad \frac{\sqrt{3}/2}{-1/2} = -\sqrt{3}$



Given:

$\sin\theta = \frac{5}{13}$

evaluate the other five trig functions for θ



$\cos\theta = \frac{12}{13}$

$\tan\theta = \frac{5}{12}$

$\sec\theta = \frac{13}{12}$

$\csc\theta = \frac{13}{5}$

$\cot\theta = \frac{12}{5}$

Given $\cot\theta = \frac{7}{6}$

Find the other five trigonometric ratios. Give answers in radical form.

$\sin\theta = \frac{6}{\sqrt{85}} = \frac{6\sqrt{85}}{85}$

$\cos\theta = \frac{7}{\sqrt{85}} = \frac{7\sqrt{85}}{85}$

$\tan\theta = \frac{6}{7}$

$\sec\theta = \frac{\sqrt{85}}{7}$

$\csc\theta = \frac{\sqrt{85}}{6}$

Hwk #20 Sec 13-8

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