

Warm - Up

What are the 3 trig functions we have used so far?

Chapter 5

Learning Target 2

I can find all 6 trig functions.

What are the six trig functions?

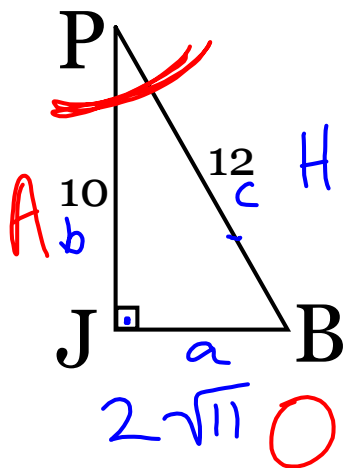
Reciprocal Trig Functions

sine \longrightarrow cosecant (csc)

cosine \longrightarrow secant (sec)

tangent \longrightarrow cotangent (cot)

1.)



$$\sin P = \frac{2\sqrt{11}}{12} = \frac{\sqrt{11}}{6} \quad \csc P = \frac{6}{\sqrt{11}} = \frac{6\sqrt{11}}{11}$$

$$\cos P = \frac{10}{12} = \frac{5}{6} \quad \sec P = \frac{6}{5}$$

$$\tan P = \frac{2\sqrt{11}}{10} = \frac{\sqrt{11}}{5} \quad \cot P = \frac{5\sqrt{11}}{11}$$

$$\begin{aligned} a^2 + b^2 &= c^2 & \left| \begin{array}{l} \text{S} \\ \text{H} \end{array} \right. & \begin{array}{l} \text{O} \\ \text{A} \end{array} \\ a^2 + 10^2 &= 12^2 & \left| \begin{array}{l} \text{C} \\ \text{H} \end{array} \right. & \begin{array}{l} \text{A} \\ \text{O} \end{array} \\ a^2 + 100 &= 144 & \left| \begin{array}{l} \text{T} \\ \text{A} \end{array} \right. & \begin{array}{l} \text{O} \\ \text{A} \end{array} \\ \sqrt{a^2} &= \sqrt{44} & & = 2\sqrt{11} \end{aligned}$$

$$\begin{array}{c} \text{2} \quad \text{2} \\ \text{2} \quad \text{11} \end{array}$$

Relating coordinate plane to Soh Cah Toa and X, Y, and R's

$$\sin \theta = \frac{y}{r}$$

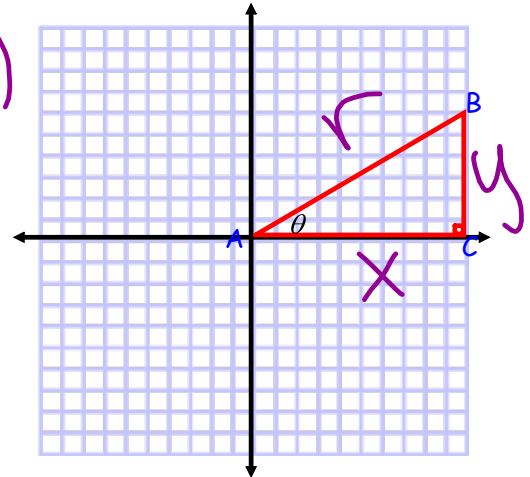
$$\csc \theta = \frac{r}{y}$$

$$\cos \theta = \frac{x}{r}$$

$$\sec \theta = \frac{r}{x}$$

$$\tan \theta = \frac{y}{x}$$

$$\cot \theta = \frac{x}{y}$$



2.) Find the six trig functions given the point $(2\sqrt{3}, -4)$

$$\sin \theta = \frac{-4}{2\sqrt{7}} = \frac{-2}{\sqrt{7}} = \frac{-2\sqrt{7}}{7} \quad \csc \theta = \frac{7}{-2\sqrt{7}}$$

$$\cos \theta = \frac{2\sqrt{3}}{2\sqrt{7}} = \frac{\sqrt{3}}{\sqrt{7}} = \frac{\sqrt{21}}{7} \quad \sec \theta = \frac{7}{\sqrt{21}}$$

$$\tan \theta = \frac{-4}{2\sqrt{3}} = \frac{-2}{\sqrt{3}} = \frac{-2\sqrt{3}}{3} \quad \cot \theta = \frac{3}{-2\sqrt{3}}$$

$$\begin{aligned} & X, Y \\ & (2\sqrt{3})^2 + (-4)^2 \end{aligned}$$

$$\begin{aligned} & \sqrt{28} = r^2 \\ & 2\sqrt{7} = r \end{aligned}$$

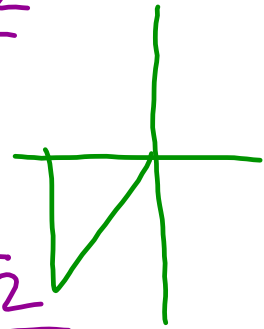
$$3.) \sin \theta = -\frac{2\sqrt{2}}{3} \quad 180^\circ < \theta < 270^\circ$$

$$\sin \theta = \frac{-2\sqrt{2}}{3} \quad \text{csc } \theta = \frac{3\sqrt{2} + 3\sqrt{2}}{-2\sqrt{2} \cdot \sqrt{2} - 4}$$

$$\cos \theta = \frac{1}{3} \quad \sec \theta = \frac{3}{1}$$

$$\tan \theta = \frac{-2\sqrt{2}}{1} \quad \cot \theta = \frac{1}{-2\sqrt{2}} = \frac{\sqrt{2}}{-4}$$

$$\begin{aligned} x^2 + (2\sqrt{2})^2 &= (3)^2 \\ x^2 + 8 &= 9 \\ x &= 1 \end{aligned}$$



Homework: 5.2 Practice