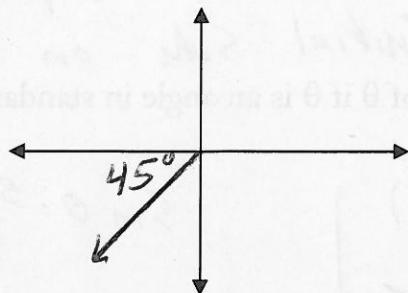


2.3 Practice Problems

Draw -135° .



- a. Find a positive coterminal angle.

$$225^\circ$$

- b. Name a point on the terminal side.

$$(-1, -1)$$

- c. Find the distance from the origin to that point.

$$\sqrt{2}$$

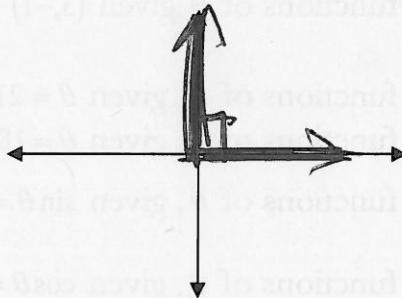
- d. Find all six trigonometric functions of -135° .

$$\sin -135^\circ = -\frac{\sqrt{2}}{2} \quad \csc -135^\circ = -\sqrt{2}$$

$$\cos -135^\circ = -\frac{\sqrt{2}}{2} \quad \sec -135^\circ = -\sqrt{2}$$

$$\tan -135^\circ = 1 \quad \cot -135^\circ = 1$$

2. Draw -270° .



- a. Find a positive coterminal angle.

$$90^\circ$$

- b. Name a point on the terminal side.

$$(0, 1)$$

- c. Find the distance from the origin to that point.

$$r = 1$$

- d. Find all six trigonometric functions of -270° .

$$\sin -270^\circ = 1$$

$$\csc -270^\circ = 1$$

$$\cos -270^\circ = 0$$

$$\sec -270^\circ = \text{und.}$$

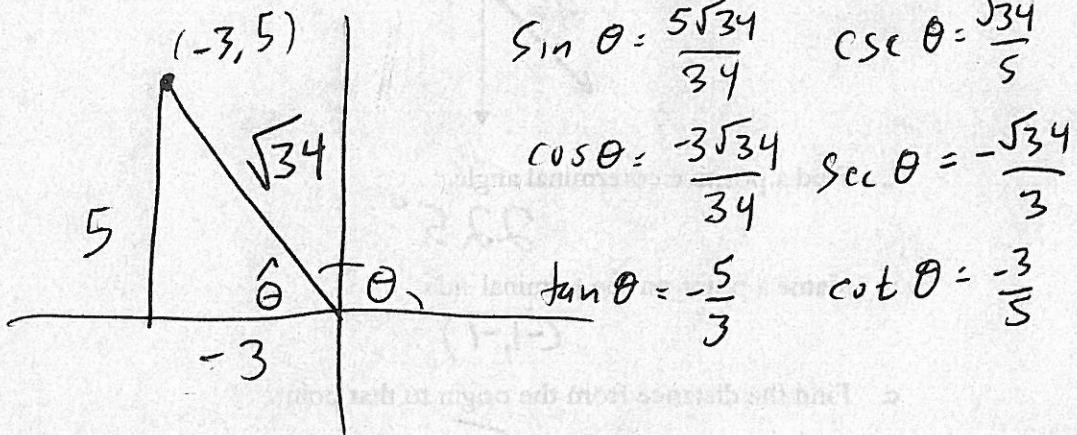
$$\tan -270^\circ = \text{undefined}$$

$$\cot -270^\circ = 0$$

3. What is an angle in standard position?

Vertex at $(0,0)$
Initial side on positive x

Example: Find the 6 trigonometric functions of θ if θ is an angle in standard position and the point $(-3,5)$ is on the terminal side of θ .

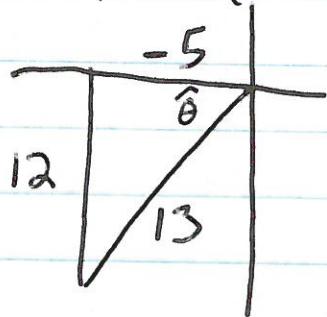


Extra Practice

- 1) If $\cos \theta = -\frac{5}{13}$, and θ terminates in quadrant III, find $\sin \theta$ and $\tan \theta$.
- 2) Find all six trig functions of angle x given the point $(3,4)$ is on the terminal side of x .
- 3) Find all six trig functions of angle x given the point $(-1,-2)$ is on the terminal side of x .
- 4) Find all six trig functions of angle x given the point (m, n) is on the terminal side of x .
- 5) Find the value of the six trigonometric functions of θ given $(3,-1)$ is a point on the terminal side of θ .
- 6) Find the value of the six trigonometric functions of θ , given $\theta = 210^\circ$.
- 7) Find the value of the six trigonometric functions of θ , given $\theta = 180^\circ$.
- 8) Find the value of the six trigonometric functions of θ , given $\sin \theta = \frac{4}{5}$ and θ lies in QII.
- 9) Find the value of the six trigonometric functions of θ , given $\cos \theta = \frac{12}{13}$ and $\sin \theta < 0$.
- 10) Find the value of $\sin 135^\circ$, $\cos(-225^\circ)$, and $\tan 495^\circ$.

Extra Practice

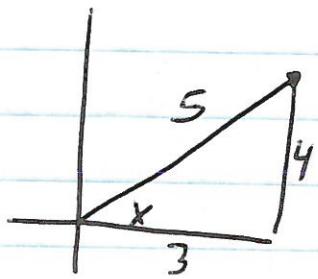
1)



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

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

2)



$$\sin X = \frac{4}{5}$$

$$\csc X = \frac{5}{4}$$

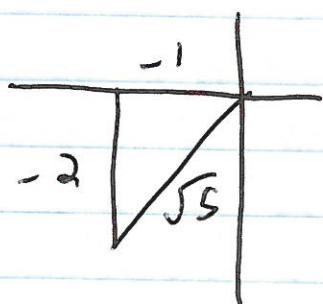
$$\cos X = \frac{3}{5}$$

$$\sec X = \frac{5}{3}$$

$$\tan X = \frac{4}{3}$$

$$\cot X = \frac{3}{4}$$

3)



$$\sin X = \frac{-2\sqrt{5}}{5}$$

$$\csc X = -\frac{\sqrt{5}}{2}$$

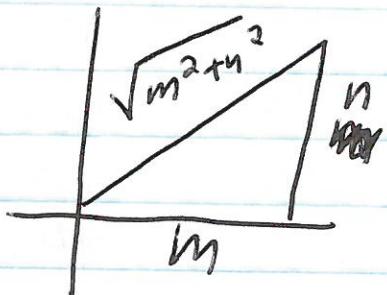
$$\cos X = \frac{-\sqrt{5}}{5}$$

$$\sec X = -\sqrt{5}$$

$$\tan X = 2$$

$$\cot X = \frac{1}{2}$$

4)



$$\sin X = \frac{n}{\sqrt{m^2+n^2}}$$

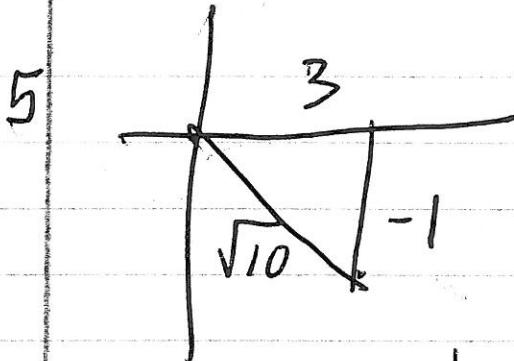
$$\csc X = \frac{\sqrt{m^2+n^2}}{n}$$

$$\cos X = \frac{m}{\sqrt{m^2+n^2}}$$

$$\sec X = \frac{\sqrt{m^2+n^2}}{m}$$

$$\tan X = \frac{n}{m}$$

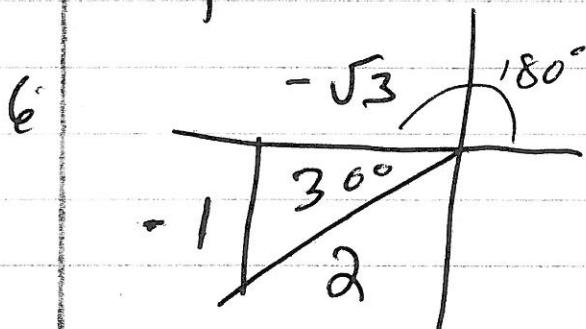
$$\cot X = \frac{m}{n}$$



$$\sin \theta = -\frac{\sqrt{10}}{10} \quad \csc \theta = -\frac{1}{\sqrt{10}}$$

$$\cos \theta = \frac{3\sqrt{10}}{10} \quad \sec \theta = \frac{\sqrt{10}}{3}$$

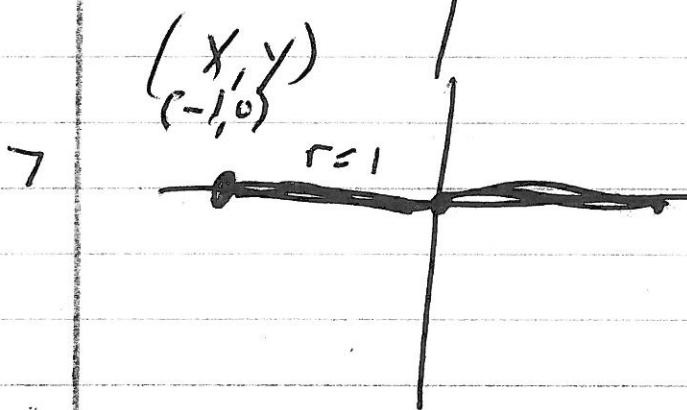
$$\tan \theta = -1/3 \quad \cot \theta = -3$$



$$\sin 210^\circ = -1/2 \quad \csc 210^\circ = -2$$

$$\cos 210^\circ = -\sqrt{3}/2 \quad \sec 210^\circ = -\frac{2\sqrt{3}}{3}$$

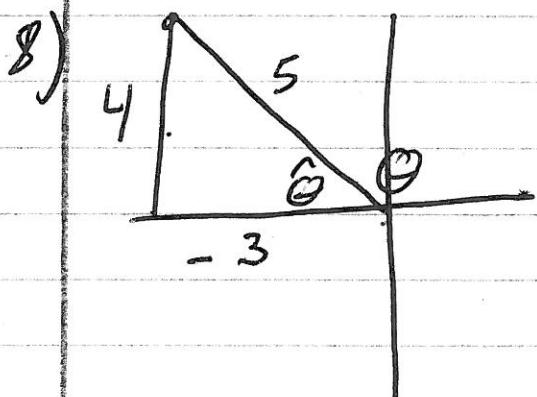
$$\tan 210^\circ = \sqrt{3}/3 \quad \cot 210^\circ = \frac{3\sqrt{3}}{3}$$



$$\sin 180^\circ = 0 \quad \csc 180^\circ = \text{und.}$$

$$\cos 180^\circ = -1 \quad \sec 180^\circ = -1$$

$$\tan 180^\circ = 0 \quad \cot 180^\circ = \text{und.}$$

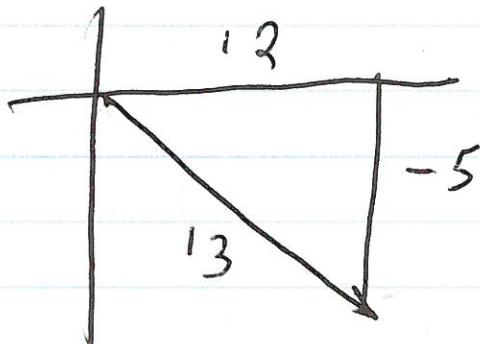


$$\sin \theta = 4/5 \quad \csc \theta = 5/4$$

$$\cos \theta = -3/5 \quad \sec \theta = -5/3$$

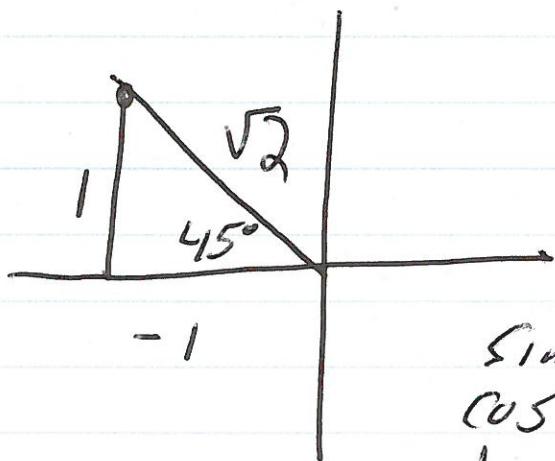
$$\tan \theta = -4/3 \quad \cot \theta = -3/4$$

9) If $\cos > 0$ & $\sin < 0$, must be Q 4.



$$\begin{aligned}\sin \theta &= -\frac{5}{13} & \csc \theta &= \frac{13}{5} \\ \cos \theta &= \frac{12}{13} & \sec \theta &= \frac{13}{12} \\ \tan \theta &= -\frac{5}{12} & \cot \theta &= -\frac{12}{5},\end{aligned}$$

10)



$$\begin{array}{c} +360^\circ \\ \nearrow \\ 135^\circ, -225^\circ, 495^\circ \\ \searrow \\ -360^\circ \end{array}$$

$$\begin{aligned}\sin 135^\circ &= \frac{\sqrt{2}}{2} \\ \cos -225^\circ &= \frac{\sqrt{2}}{2} \\ \tan 495^\circ &= -1\end{aligned}$$