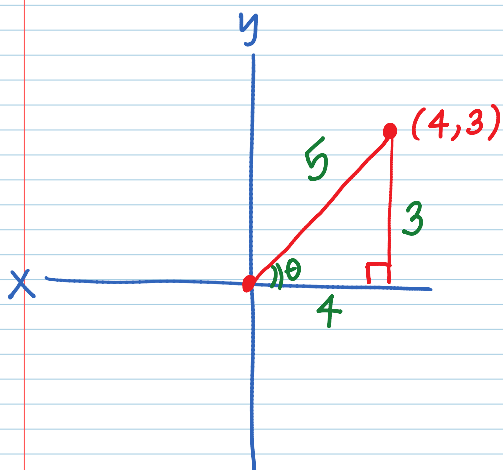


13.3 Day 2: Finding trig values

When given a specific point on the terminal side of an angle, use the reference angle & draw a right triangle.

EX: Find the six trig functions of θ if $(4, 3)$ is a point on the terminal side of the angle.



$$\sin \theta = \frac{3}{5}$$

$$\csc \theta = \frac{5}{3}$$

$$\cos \theta = \frac{4}{5}$$

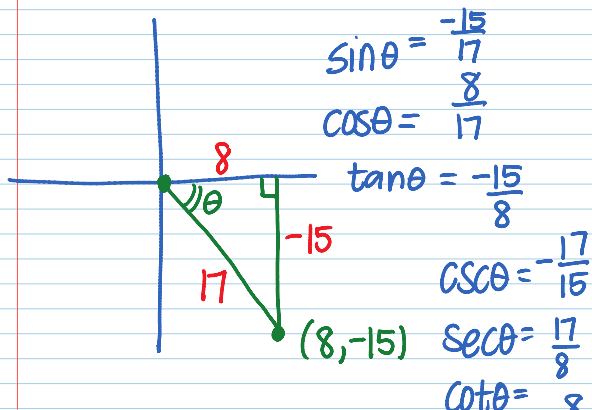
$$\sec \theta = \frac{5}{4}$$

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

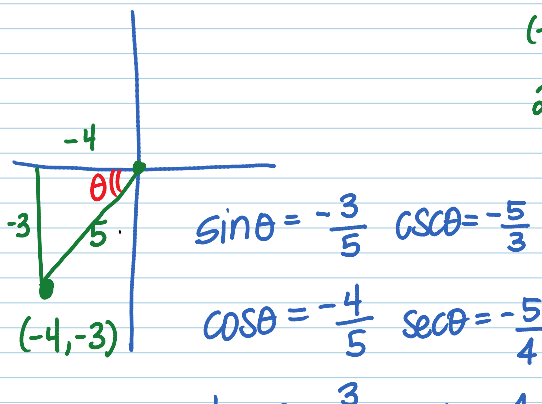
$$\cot \theta = \frac{4}{3}$$

Use the following points to find the 6 trig functions of θ if those points are on the terminal side of the angle.

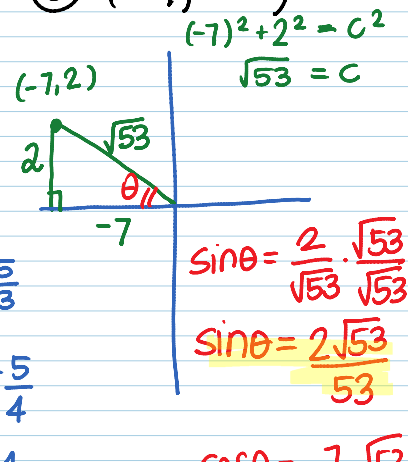
① $(8, -15)$



② $(-4, -3)$



③ $(-7, 2)$



$$| \quad \bullet (8, -15) \quad \sec\theta = \frac{17}{8} \quad (-4, -3) \quad \cos\theta = -\frac{1}{5} \quad \sec\theta = -\frac{5}{4}$$

$$\cot\theta = -\frac{8}{15} \quad \tan\theta = \frac{3}{4} \quad \cot\theta = \frac{4}{3}$$

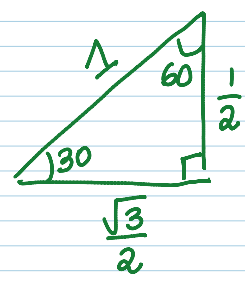
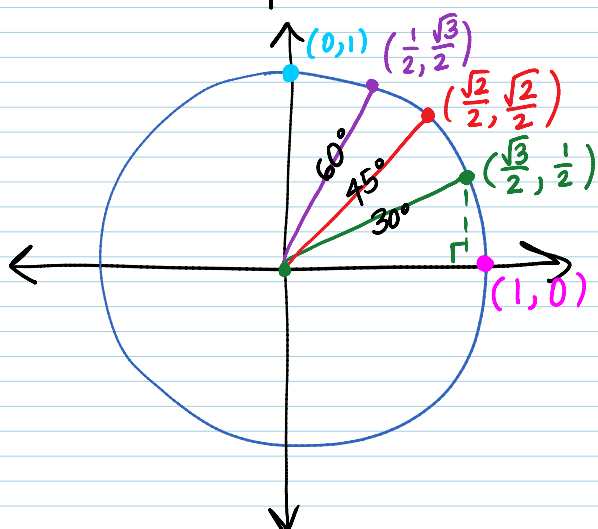
$$| \quad \frac{53}{\sqrt{53}} \cdot \frac{\sqrt{53}}{\sqrt{53}}$$

$$\cos\theta = \frac{-7\sqrt{53}}{53}$$

$$\cos\theta = \frac{-7\sqrt{53}}{53}$$

$$\tan\theta = \frac{2}{-7}$$

Let's place a circle with a radius of 1 on the coordinate plane.



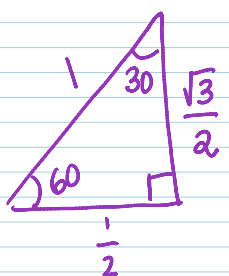
$$x^2 + \left(\frac{1}{2}\right)^2 = 1^2$$

$$x^2 + \frac{1}{4} = 1$$

$$-\frac{1}{4} \quad -\frac{1}{4}$$

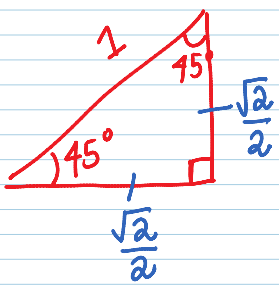
$$\sqrt{x^2} = \sqrt{\frac{3}{4}}$$

$$x = \frac{\sqrt{3}}{\sqrt{4}} = \frac{\sqrt{3}}{2}$$



$$\sin 60^\circ = \frac{\sqrt{3}}{2}$$

$$= \frac{1}{\frac{2}{\sqrt{3}}}$$



$$x^2 + x^2 = 1^2$$

$$\frac{2x^2}{2} = \frac{1}{2}$$

$$\sqrt{x^2} = \sqrt{\frac{1}{2}}$$

$$x = \frac{\sqrt{1}}{\sqrt{2}} = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$