

## Trig 5.3

Use the unit circle to find the values of the six trig functions

Find the (6) values of an angle in standard position given terminal side

six trig functions

standard position

terminal side

quadrantal angles

reference angles

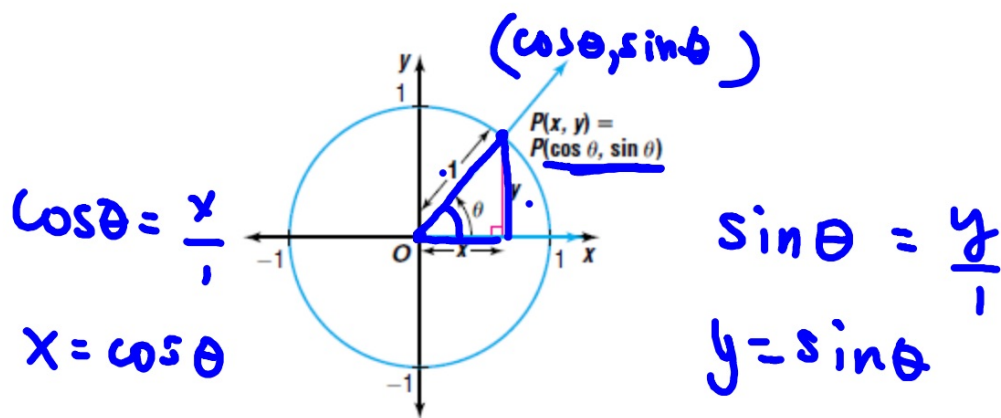
unit circle

circular function

activity: whiteboards

Handy angles quiz some day...

Quiz 5.1-5.2 today



**Sine and Cosine**

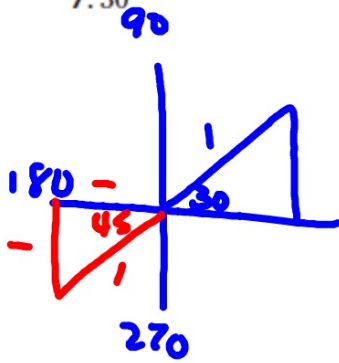
If the terminal side of an angle  $\theta$  in standard position intersects the unit circle at  $P(x, y)$ , then  $\cos \theta = x$  and  $\sin \theta = y$ .

Use the unit circle to find the values of the six trigonometric functions for each angle.

7.  $30^\circ$

8.  $225^\circ$

1. reference angle
2. trig functions
3. + or -



$$\begin{aligned} \sin \theta &= -\frac{\sqrt{2}}{2} \\ \cos \theta &= -\frac{\sqrt{2}}{2} \\ \tan \theta &= 1 \end{aligned}$$

$$\begin{aligned} \csc \theta &= -\frac{2}{\sqrt{2} \cdot \frac{1}{\sqrt{2}}} = -\frac{2}{1} = -2 \\ \sec \theta &= -\sqrt{2} \\ \cot \theta &= 1 \end{aligned}$$

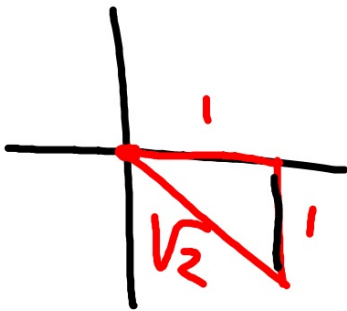
$$1^2 + 1^2 = h^2$$

$$2 = h^2$$

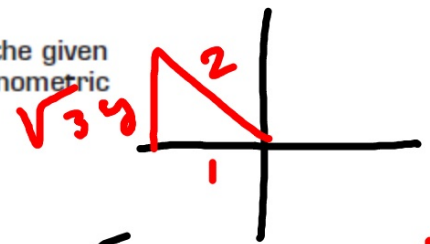
Unit circle?...doesn't say we are...

Suppose  $\theta$  is an angle in standard position whose terminal side lies in the given quadrant. For each function, find the values of the remaining five trigonometric functions for  $\theta$ .

11.  $\tan \theta = -1$ ; Quadrant IV



12.  $\cos \theta = -\frac{1}{2}$ ; Quadrant II



$$\sin \theta = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{2} \quad \csc \theta = \frac{2}{\sqrt{2}} = \sqrt{2}$$

$$\cos \theta = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2} \quad \sec \theta = \frac{\sqrt{2}}{1} = \sqrt{2}$$

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

$$1^2 + y^2 = 2^2$$

$$1 + y^2 = 4$$

$$y^2 = 3$$

Are we in the unit circle?

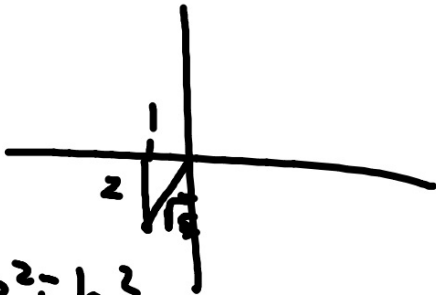
Find the values of the six trigonometric functions for angle  $\theta$  in standard position if a point with the given coordinates lies on its terminal side.

3.  $(-1, -2)$

4.  $(-2, 2)$

5.  $(5, 2)$

6.  $(-4, 3)$

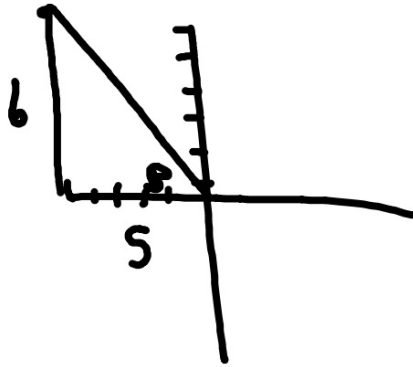
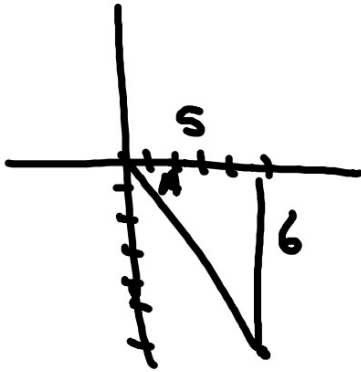


$$1^2 + 2^2 = h^2$$

$$1 + 4 = h^2$$

Unit circle?...

36. The terminal side of one angle in standard position contains the point with coordinates  $(5, -6)$ . The terminal side of another angle in standard position contains the point with coordinates  $(-5, 6)$ . Compare the sines of these angles.



WB 5.3