

### 13.3 Trig Functions of General Angles HW Day 1

key

Find the exact values of the 6 trig functions of  $\theta$  if the terminal side in standard position contains the given point.

1. (7,24)

$$\sin \theta = \frac{24}{25}$$

$$\cos \theta = \frac{7}{25}$$

$$\tan \theta = \frac{24}{7}$$

$$\csc \theta = \frac{25}{24}$$

$$\sec \theta = \frac{25}{7}$$

$$\cot \theta = \frac{7}{24}$$

2. (2,1)

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

$$\cos \theta = \frac{2\sqrt{5}}{5}$$

$$\tan \theta = \frac{1}{2}$$

$$\csc \theta = \sqrt{5}$$

$$\sec \theta = \frac{\sqrt{5}}{2}$$

$$\cot \theta = 2$$

3. (5,-8)

$$\sin \theta = -\frac{8\sqrt{89}}{89}$$

$$\cos \theta = \frac{5\sqrt{89}}{89}$$

$$\tan \theta = -\frac{8}{5}$$

$$\csc \theta = -\frac{\sqrt{89}}{8}$$

$$\sec \theta = \frac{\sqrt{89}}{5}$$

$$\cot \theta = -\frac{5}{8}$$

4. (4,-3)

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

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

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

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

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

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

5. (0,-6)

$$\sin \theta = -1$$

$$\cos \theta = 1$$

$$\tan \theta = \text{und.}$$

$$\csc \theta = -1$$

$$\sec \theta = \text{und.}$$

$$\cot \theta = 0$$

6. (-1,0)

$$\sin \theta = 0$$

$$\cos \theta = -1$$

$$\tan \theta = 0$$

$$\csc \theta = \text{und.}$$

$$\sec \theta = -1$$

$$\cot \theta = \text{und.}$$

7. ( $\sqrt{2}, -\sqrt{2}$ )

$$\sin \theta = -\frac{\sqrt{2}}{2}$$

$$\cos \theta = \frac{\sqrt{2}}{2}$$

$$\tan \theta = -1$$

$$\csc \theta = -\sqrt{2}$$

$$\sec \theta = \sqrt{2}$$

$$\cot \theta = -1$$

8. ( $-\sqrt{3}, -\sqrt{6}$ )

$$\sin \theta = -\frac{\sqrt{6}}{3}$$

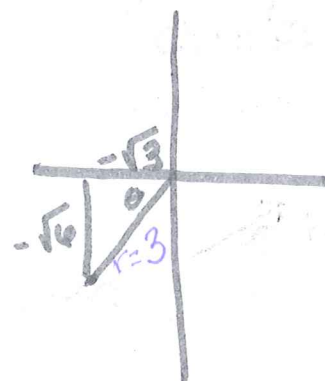
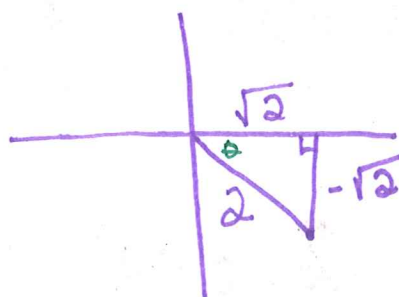
$$\cos \theta = -\frac{\sqrt{3}}{3}$$

$$\tan \theta = \sqrt{2}$$

$$\csc \theta = -\frac{\sqrt{6}}{2}$$

$$\sec \theta = -\sqrt{3}$$

$$\cot \theta = \frac{\sqrt{2}}{2}$$

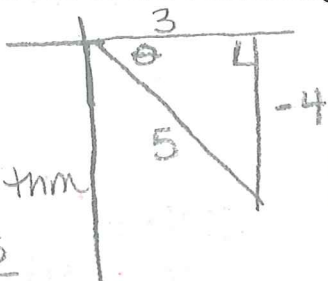


Suppose  $\theta$  is an angle in standard position whose terminal side is in the given quadrant. For each function, find the exact values of the remaining five trig functions.

9.  $\cos \theta = 3/5$ , Quadrant IV

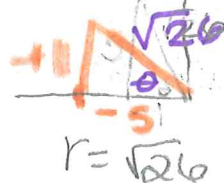
$x=3$   $y=?$   $r=5$   
 $y=-4$  pyth. thm

$\sin \theta = -4/5$   $\csc \theta = -5/4$   
 $\tan \theta = -4/3$   $\sec \theta = 5/3$   
 $\cot \theta = -3/5$



10.  $\tan \theta = -1/5$ , Quadrant II

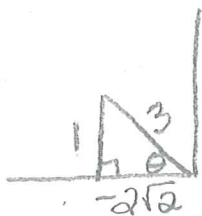
$x=-5$   $y=1$   
 $\sin \theta = 1/\sqrt{26}$   
 $\cos \theta = -5/\sqrt{26}$   
 $\csc \theta = \sqrt{26}$   
 $\sec \theta = -\sqrt{26}/5$   
 $\cot \theta = -5$



11.  $\sin \theta = 1/3$ , Quadrant II

$x = -2\sqrt{2}$   $y=1$   $r=3$

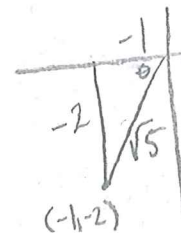
$\sin \theta = 1/3$   $\csc \theta = 3$   
 $\cos \theta = -2\sqrt{2}/3$   $\sec \theta = -3/2\sqrt{2} = -3\sqrt{2}/2\sqrt{2} = -3/2$   
 $\cot \theta = -2\sqrt{2}$



12.  $\cot \theta = 1/2$ , Quadrant III

$x/y = -1/-2$   $x=-1$   $y=-2$

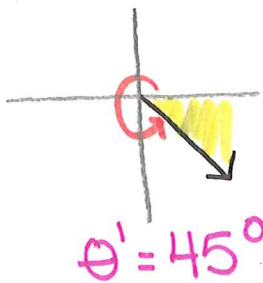
$\sin \theta = -2/\sqrt{5}$   
 $\cos \theta = -1/\sqrt{5}$   
 $\csc \theta = -\sqrt{5}/2$   
 $\tan \theta = 2$   
 $\sec \theta = -\sqrt{5}$



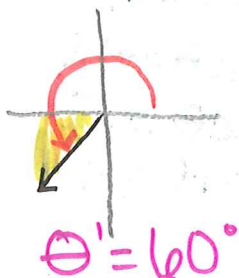
Review:

Sketch each angle. Then find its reference angle.

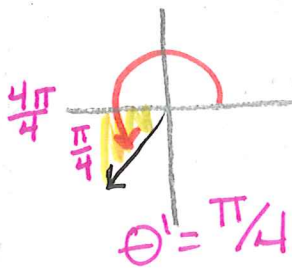
34.  $315^\circ$



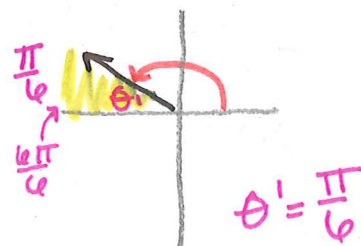
35.  $240^\circ$



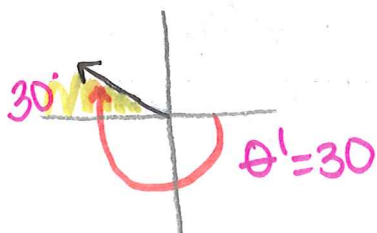
36.  $5\pi/4$



37.  $5\pi/6$



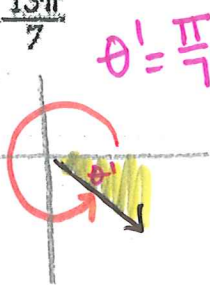
38.  $-210^\circ$



39.  $-125^\circ$



40.  $13\pi/7$



41.  $-2\pi/3$

