

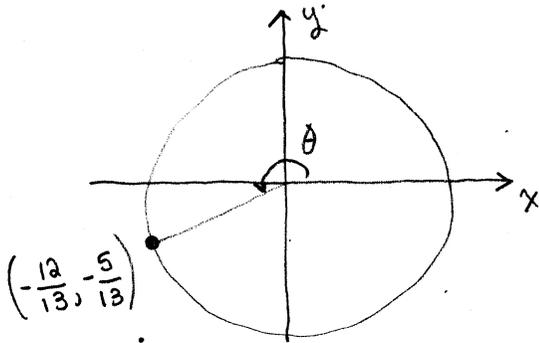
# Math 130 - Quiz 2 IC

August 28, 2019

Name key Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary. You must work individually on this quiz.

1. (3 points) The angle  $\theta$  is in standard position. Its terminal side intersects the unit circle at the point  $(-12/13, -5/13)$ . Determine the values of the six trigonometric functions at  $\theta$ .



$$\sin \theta = -\frac{5}{13}$$

$$\csc \theta = -\frac{13}{5}$$

$$\cos \theta = -\frac{12}{13}$$

$$\sec \theta = -\frac{13}{12}$$

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

$$\cot \theta = \frac{12}{5}$$

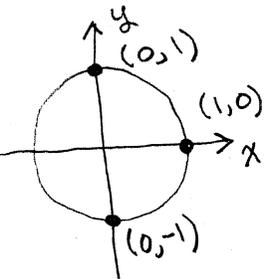
2. (2 points) Without using your calculator, determine each of the following. If not defined, say so.

(a)  $\cos 0 = 1$  (x-coord at  $(1,0)$ )

(b)  $\sin(\pi/2) = 1$  (y-coord at  $(0,1)$ )

(c)  $\tan(\pi/2) = \frac{1}{0} ?$  (y/x at  $(0,1)$ )  
Not Defined

(d)  $\cos(3\pi/2) = 0$  (x-coord at  $(0,-1)$ )



# Math 130 - Quiz 2 TH

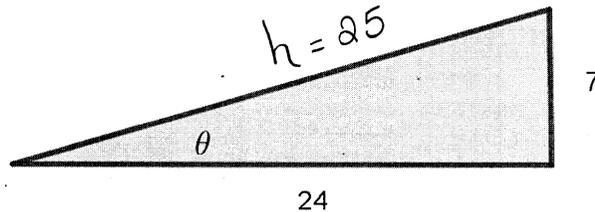
August 28, 2019

Name key  
Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary. You must work individually on this quiz. This quiz is due September 4.

1. (3.5 points) A right triangle is shown below, and the angle  $\theta$  is indicated. Determine the values of the six trigonometric functions at  $\theta$ .

$$\begin{aligned}7^2 + 24^2 &= h^2 \\625 &= h^2 \\ \downarrow \\ h &= 25\end{aligned}$$



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

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

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

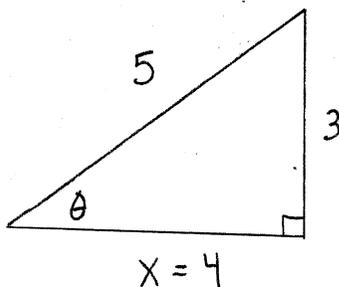
$$\csc \theta = \frac{25}{7}$$

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

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

2. (3.5 points) Roughly sketch a right triangle that has an angle  $\theta$  for which  $\sin \theta = 3/5$ . Determine the values of the five other trigonometric functions at  $\theta$ .

$$\begin{aligned}x^2 + 3^2 &= 5^2 \\x^2 + 9 &= 25 \\x^2 &= 16 \\x &= 4\end{aligned}$$



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

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

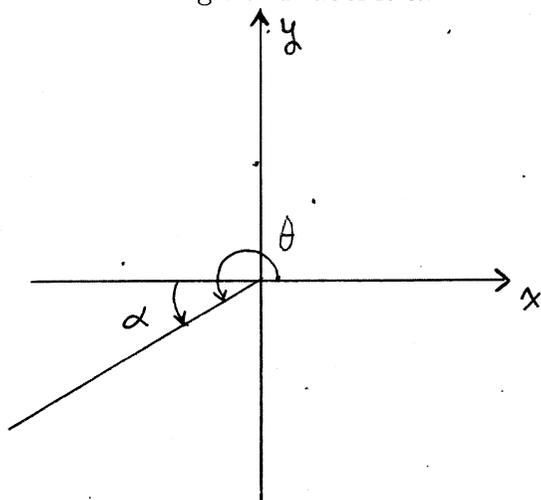
$$\sec \theta = \frac{5}{4}$$

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

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

3. (3 points) Let  $\theta$  be the angle in standard position that has radian measure  $7\pi/6$ .

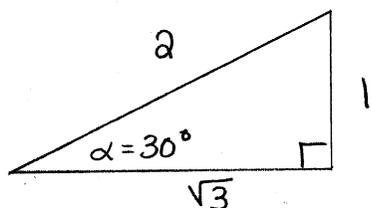
(a) Sketch the reference angle and label it  $\alpha$ .



(b) Find the measure of the reference angle,  $\alpha$ .

$$\frac{7\pi}{6} - \frac{6\pi}{6} = \boxed{\frac{\pi}{6}}$$

(c) Determine  $\cot \alpha$ .



$$\cot \alpha = \frac{\text{Adj}}{\text{Opp}} = \frac{\sqrt{3}}{1}$$

(d) Briefly explain how to determine  $\cot \theta$  from  $\cot \alpha$ .

SINCE  $\theta$  IS A 3<sup>RD</sup> QUAD ANGLE,

$$\cot \theta > 0.$$

IT FOLLOWS THAT

$$\cot \theta = \cot \alpha = \sqrt{3}$$