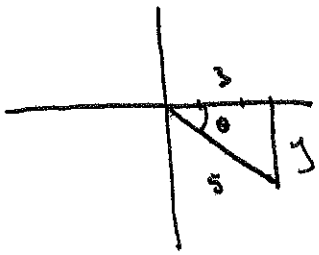
Quiz 10 Name: Key

Math 115, Fall 2016 Thursday Discussion Time: _____

Directions: You have 20 minutes to complete this quiz. Read each problem carefully. There are three problems on the back of this page. Please put a box around your answers. No calculators are allowed.

1. (2 points)

   If $\cos(\theta) = \frac{3}{5}$ and θ terminates in quadrant IV, determine $\sin(\theta)$.

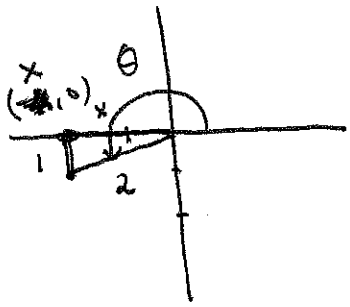


$3^2 + y^2 = 5^2 \Rightarrow y^2 = 25 - 9 = 16 \Rightarrow y = -4$

$\sin(\theta) = -\frac{4}{5}$

2. (2 points)

   If $\sin(\theta) = -\frac{1}{2}$ and $\pi < \theta < \frac{3\pi}{2}$, determine $\cos(\theta)$.



$x^2 + 1^2 = 2^2 \Rightarrow x^2 = 3 \Rightarrow x = -\sqrt{3}$

$\cos\theta = -\frac{\sqrt{3}}{2}$

3. (2 points)

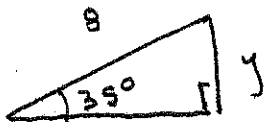
Determine the exact value of $\sin\left(\frac{\pi}{6}\right)\cos\left(\frac{\pi}{4}\right)$.

$\sin\left(\frac{\pi}{6}\right) = \frac{1}{2}$, $\cos\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}$

$\sin\left(\frac{\pi}{6}\right)\cos\left(\frac{\pi}{4}\right) = \frac{1}{2}\cdot\frac{\sqrt{2}}{2} = \boxed{\frac{\sqrt{2}}{4}}$

4. (2 points)

If a right triangle has an angle $\theta = 35°$ and the hypotenuse has length 8, determine the length of the side of the triangle that is opposite to θ. Leave your answer in exact form.

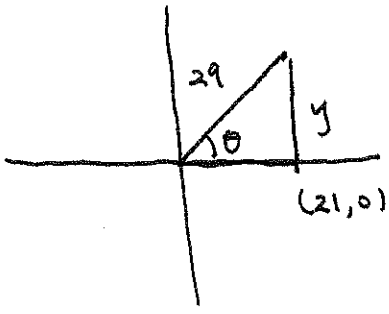


$\sin 35° = \frac{y}{8}$

$\boxed{y = 8\sin(35°)}$

5. (2 points)

If $\cos(\theta) = \frac{21}{29}$ and θ terminates in quadrant I, determine $\tan(\theta)$.



$21^2 + y^2 = 29^2 \Rightarrow y^2 = 29^2 - 21^2 = (29+21)(29-21)$

$= (50)(8) = 2^4 \cdot 5^2$

$\Rightarrow y = 2^2 \cdot 5 = 20$

$\boxed{\tan\theta = \frac{20}{21}}$