LAST NAME: FIRST NAME: KEY

Math 008B - Spring 2016

Quiz 1: Wednesday April 13, 2016

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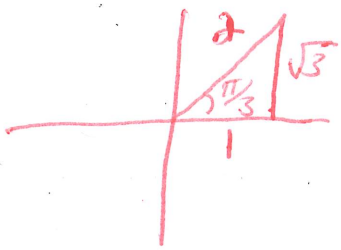
1. (4 points) Evaluate the following expressions. Leave answes with square roots, such as $\sqrt{2}$, not 1.41...

   If $\theta = \frac{7\pi}{3}$, then find a) $\sin(\theta)$, b) $\cos(\theta)$, c) $\tan(\theta)$, d) $\sec(\theta)$

$\theta = \frac{7\pi}{3} \Rightarrow$ reference angle of $\theta = \frac{\pi}{3}$



a) $\sin\left(\frac{7\pi}{3}\right) = \sin\left(\frac{\pi}{3}\right) = \frac{y}{r} = \boxed{\frac{\sqrt{3}}{2}}$

b) $\cos\left(\frac{7\pi}{3}\right) = \cos\left(\frac{\pi}{3}\right) = \frac{x}{r} = \boxed{\frac{1}{2}}$

c) $\tan\left(\frac{7\pi}{3}\right) = \tan\left(\frac{\pi}{3}\right) = \frac{\sin(\pi/3)}{\cos(\pi/3)} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \boxed{\sqrt{3}}$

d) $\sec\left(\frac{7\pi}{3}\right) = \sec\left(\frac{\pi}{3}\right) = \frac{1}{\cos(\pi/3)} = \frac{1}{\frac{1}{2}} = \boxed{2}$

Please, justify your answers.

2. (4 points) Evaluate the following expressions. Your answer must be an angle in $-\frac{\pi}{2} \leq \theta \leq \pi$.

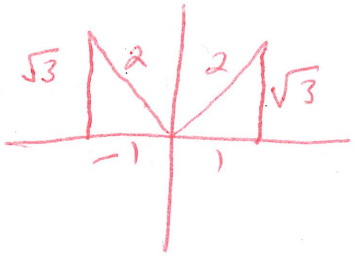
$a)\ \sin^{-1}(\sin(2\pi/3))$
$b)\ \sin^{-1}(\sin(\pi/6))$
$c)\ \cos^{-1}(\cos(-\pi/3))$
$d)\ \cos^{-1}(\cos(7\pi/6))$

a) $\sin^{-1}(\sin(\frac{2\pi}{3}))$

$\frac{2\pi}{3}$ is not in $[-\frac{\pi}{2}, \frac{\pi}{2}]$

reference angle is $\frac{\pi}{3}$

$\Rightarrow \sin^{-1}(\sin(\frac{2\pi}{3})) = \boxed{\frac{\pi}{3}}$



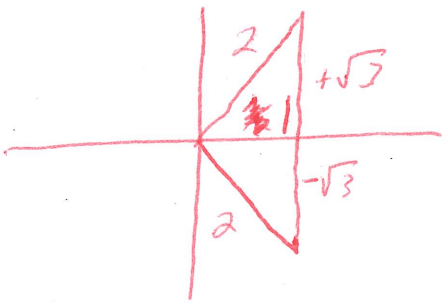
b) $\sin^{-1}(\sin(\frac{\pi}{6}))$ $\quad \frac{\pi}{6} \in [-\frac{\pi}{2}, \frac{\pi}{2}]$

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

c) $\cos^{-1}(\cos(-\frac{\pi}{3}))$

$-\frac{\pi}{3} \notin [0, \pi] \Rightarrow$ reference angle is $\frac{\pi}{3}$

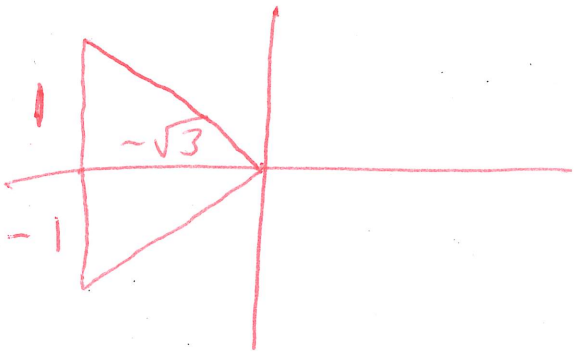
$= \boxed{\frac{\pi}{3}}$



d) $\cos^{-1}(\cos(\frac{7\pi}{6}))$

$\frac{7\pi}{6} \notin [0, \pi] \Rightarrow$ reference angle is $\frac{5\pi}{6}$

$= \boxed{\frac{5\pi}{6}}$



Please, justify your answers and show all work.