Pre-Calculus **HW#5.5-1** **Name:** Key

Solve the following equations over the interval $[0,2\pi)$.

1. $2\cos x+\sqrt{3}=0$

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

$x = \frac{5\pi}{6}, \frac{7\pi}{6}$

2. $4\sin\theta-1=2\sin\theta$

$2\sin\theta - 1 = 0$

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

$\theta = \frac{\pi}{6}, \frac{5\pi}{6}$

3. $3\sin\theta+5=-2\sin\theta$

$5\sin\theta + 5 = 0$

$\sin\theta = -1$

$\theta = \frac{3\pi}{2}$

4. $\sin^2\theta-1=0$

$\sin^2\theta = 1$

$\sin\theta = \pm 1$

$\theta = \frac{\pi}{2}, \frac{3\pi}{2}$

5. $9\tan^2 x-3=0$

$\tan^2 x = \frac{1}{3}$

$\tan x = \pm\sqrt{\frac{1}{3}} = \pm\frac{\sqrt{3}}{3}$

$x = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$

6. $4\sec^2 x-2=0$

$\sec^2 x = \frac{1}{2}$

$\cos^2 x = 2$

$\cos x = \pm\sqrt{2} \approx \pm 1.4 \rightarrow$ undefined for cos

No solution

For the following, round your answers to 4 decimals.

7. $\sin x = .8246$

$x = \sin^{-1}(.8246)$

$x = .9695$

AND

$x = \pi - .9695$

$x = .9695, 2.1712$

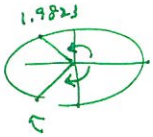
8. $\cos x = -\frac{2}{5}$

$x = \cos^{-1}(2/5)$

$= 1.9823$

AND

$x = 2\pi - 1.9823$



$x = 2\pi - 1.9823$

$x = 1.9823, 4.3009$

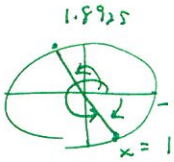
9. $\tan x = -3$

$x = \tan^{-1}(-3)$

$= -1.249$

AND

$x = \pi + 1.8925$



$x = 1.8925 + \pi$

$x = 1.8925, 5.0341$