

QUIZ 6  
SOLUTIONS  
943-DW  
FALL 2011

1.  $3x - 4\sec 56^\circ = \frac{\cot(78^\circ)}{5x}$

(MULTIPLY BOTH Sides by 5x)

$15x^2 - 20\sec 56^\circ x = \cot(78^\circ)$

$15x^2 - \frac{20}{\cos 56^\circ} x - \frac{1}{\tan 78^\circ} = 0$

$15x^2 - 35.77x - 0.21 = 0$

USE QUADRATIC FORMULA.

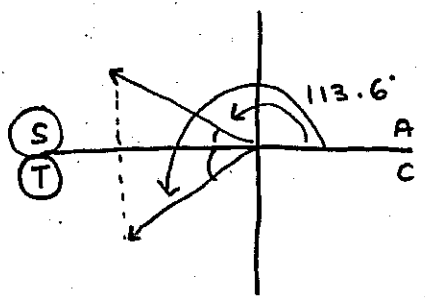
$x = \frac{35.77 \pm \sqrt{(-35.77)^2 - 4(15)(-0.21)}}{2(15)}$

$= \frac{35.77 \pm \sqrt{1292.09}}{30} = \frac{35.77 \pm 35.95}{30}$

$x_1 = 2.39$   
 $x_2 = -0.006$

2.  $\sec x = -2.5$   
 $\cos x = \frac{-1}{2.5}$

$x_1 = \cos^{-1}\left(\frac{-1}{2.5}\right)$   
 $= 113.6^\circ$



cos x is Negative

$x_2 = 360^\circ - 113.6^\circ$   
 $= 246.4^\circ$

$$3. \quad 5 \sin x - 6 = -\csc x$$

$$5 \sin x - 6 = -\frac{1}{\sin x}$$

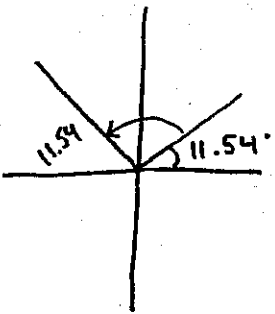
$$5 \sin^2 x - 6 \sin x = -1$$

$$5 \sin^2 x - 6 \sin x + 1 = 0$$

$$(5 \sin x - 1)(\sin x - 1) = 0$$

$$\sin x = \frac{1}{5} \quad \text{or} \quad \sin x = 1$$

$$\sin^{-1}\left(\frac{1}{5}\right) = 11.54^\circ$$

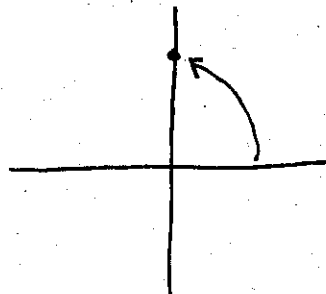


$$x_1 = \boxed{11.54^\circ}$$

$$x_2 = 180 - 11.54$$

$$= \boxed{168.46^\circ}$$

$$\sin^{-1}(1) = 90^\circ$$



$$x_3 = \boxed{90^\circ}$$