

5.4

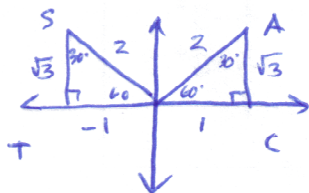
4) Find exact solns on the interval $x \in [0, 2\pi]$

a)

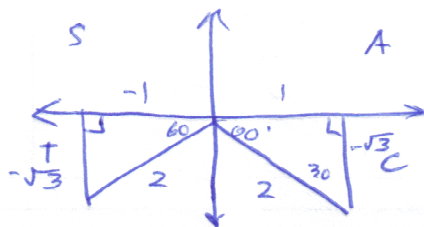
$$\sin^2 x - \frac{3}{4} = 0$$

$$\sin^2 x = \frac{3}{4}$$

$$\sin x = \frac{\sqrt{3}}{2} \quad \text{and} \quad \sin x = -\frac{\sqrt{3}}{2}$$



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



$$x = \frac{4\pi}{3}, \frac{5\pi}{3}$$

(b) (d) Solve on the interval $x \in [0, 2\pi]$

$$6 \cos^2 x + \cos x - 1 = 0$$

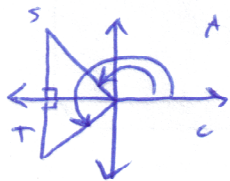
$$6 \cos^2 x + 3 \cos x - 2 \cos x - 1 = 0$$

$$3 \cos x (2 \cos x + 1) - 1 (2 \cos x + 1) = 0$$

$$(3 \cos x - 1) (2 \cos x + 1) = 0$$

$$2 \cos x + 1 = 0$$

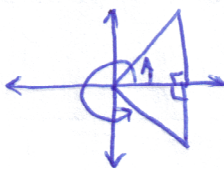
$$\cos x = -\frac{1}{2}$$



$$x = \frac{2\pi}{3}, \frac{4\pi}{3}$$

$$3 \cos x - 1 = 0$$

$$\cos x = \frac{1}{3}$$



$$x = 1.23 \text{ rad}$$

$$x = 5.05 \text{ rad}$$

5.4

⑥ Solve on the interval $x \in [0, 2\pi]$

$$(f) \csc x - 3 \csc x \sec x = 0$$

$$\frac{-3 \cancel{\csc x} \sec x}{-3 \cancel{\csc x}} = \frac{-\csc x}{-3 \csc x}$$

$$\sec x = \frac{1}{3}$$

$$\cos x = 3$$

no sol'n !!

$$\textcircled{9} \quad r = \frac{V^2}{g} \sin 2\theta$$

$$a) \quad 107 = \frac{(34.8)^2}{9.8} \sin 2\theta$$

$$107 = 123.5755102 \sin 2\theta$$

$$0.865867353 = \sin 2\theta$$

Let y be 2θ

$$0.865867353 = \sin y$$

$$1.046881537 = y$$

$$2.094711117 = y$$

$$\therefore \theta = 0.523440768$$

$$\theta = 1.047355558$$