

1. Solve:

a) $2 \tan \theta - 1 = 4$ (nearest tenth) $-180^\circ \leq \theta < 360^\circ$

$$2 \tan \theta = 5$$

$$\tan \theta = 5/2$$

QI & QIII

$$\theta_R = \tan^{-1}(5/2)$$

$$= 68.2^\circ$$

$$180 + 68.2$$

$$= 248.2^\circ$$

$$\theta = -110.8^\circ, 68.2^\circ,$$

$$248.2^\circ$$

b) State the general solution.

$$\theta = 68.2^\circ + 180^\circ n; n \in \mathbb{I}$$

2. Solve:

a) $\sqrt{3} \csc \theta + 2 = 0$ (exact answers) $-\frac{\pi}{2} \leq \theta < \frac{3\pi}{2}$

$$\sqrt{3} \csc \theta = -2$$

$$\csc \theta = -2/\sqrt{3}$$

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



$$\theta_R = \pi/3, \pi + \pi/3$$

$$\theta = -\pi/3, 4\pi/3$$

b) State the general solutions.

$$\theta = \pi/3 + 2\pi n; n \in \mathbb{I}$$

$$\theta = 4\pi/3 + 2\pi n$$

OR

$$5\pi/3 + 2\pi n$$

3. Solve:

a) $5 \cot^2 \theta + 2 = 7$ (exact answers) $0 \leq \theta < 2\pi$

$$\cot^2 \theta = 1$$

$$\cot \theta = \pm 1$$

$$\tan \theta = \pm 1$$

$$\theta_R = \pi/4$$

$$\theta = \pi/4, 3\pi/4, 5\pi/4, 7\pi/4$$

b) State the general solution.

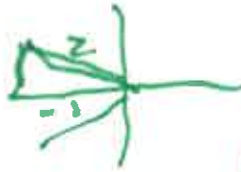
$$\theta = \pi/4 + \pi/2 n; n \in \mathbb{I}$$

4. Solve:

a) $3 \sec^2 \theta + 5 \sec \theta - 2 = 0$ (exact answers) $0 \leq \theta < 2\pi$

$$\begin{aligned} 3x^2 + 5x - 2 \\ 3x^2 + 6x - x - 2 \\ 3x(x+2) - 1(x+2) \\ (x+2)(3x-1) = 0 \\ x = -2 \quad x = 1/3 \end{aligned}$$

$$\begin{aligned} \sec \theta &= -2 & \sec \theta &= 1/3 \\ \cos \theta &= -1/2 & \cos \theta &= 3 \end{aligned}$$



$$\theta_R = \pi/3$$

$$\theta = 2\pi/3, 4\pi/3$$

b) State the general solutions.

$$\begin{aligned} \theta &= 2\pi/3 + 2\pi n \\ \theta &= 4\pi/3 + 2\pi n \end{aligned} ; n \in \mathbb{I}$$