

4.5

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$$(a) \quad \sin 2x + \cos x = 0$$

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

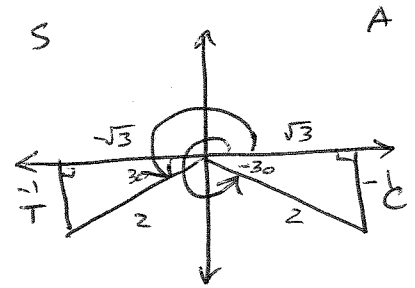
$$\cos x (2\sin x + 1) = 0$$

$$\cos x = 0 \quad \text{and} \quad 2\sin x + 1 = 0$$

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

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

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



$$(c) \quad (\sin x - \cos x)^2 = 1$$

$$(\sin x - \cos x)(\sin x - \cos x) = 1$$

$$\sin^2 x - 2\sin x \cos x + \cos^2 x = 1$$

$$\sin^2 x + \cos^2 x - 2\sin x \cos x = 1$$

$$1 - 2\sin x \cos x = 1$$

$$1 - \sin 2x = 1$$

$$-\sin 2x = 0$$

$$\sin 2x = 0$$

$$\text{Let } y = 2x$$

$$\sin y = 0$$

$$\therefore y = 0, \pi, 2\pi, 3\pi$$

$$\therefore \begin{matrix} 2x = 0 & 2x = \pi & 2x = 2\pi & \\ \Rightarrow & \Rightarrow & \Rightarrow & \\ x = 0 & x = \frac{\pi}{2} & x = \pi & \end{matrix}$$

$$\begin{matrix} 2x = 3\pi \\ x = \frac{3\pi}{2} \end{matrix}$$