

2.56
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$$y = \sqrt{2} \sin^2 x + \sin x - \cos x$$

$$y' = 2\sqrt{2} \sin x \cos x + \cos x + \sin x$$

$$0 = 2\sqrt{2} \sin x \cos x + \cos x + \sin x$$

$$0 = \sqrt{2} \sin 2x + \sin\left(\frac{\pi}{2} - x\right) + \sin x$$

$$0 = \sqrt{2} \sin 2x + 2 \sin \frac{\pi}{4} \cos\left(\frac{\pi}{4} - x\right)$$

$$-\sqrt{2} \sin 2x = \sqrt{2} \cos\left(\frac{\pi}{4} - x\right)$$

$$\sin(-2x) = \sin\left(\frac{\pi}{2} - \frac{\pi}{4} + x\right)$$

$$\sin(-2x) = \sin\left(\frac{\pi}{4} + x\right)$$

$$-2x = \frac{\pi}{4} + x + 2\pi k$$

$$x = -\frac{\pi}{12} + \frac{2\pi k}{3}$$

$$-2x = \frac{\pi}{4} - x + 2\pi k$$

$$x = -\frac{3\pi}{4} + 2\pi k$$

$$x = \frac{7\pi}{12}, \frac{\pi}{4}, \frac{11\pi}{12}$$

$$\sqrt{2\pi} \quad 0 \leq x \leq 2\pi$$