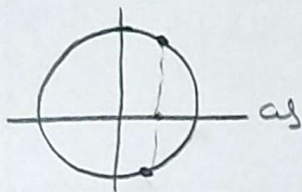


$$1 \cos x - \tan^2 x = 1 \rightarrow 1 \cos x = \frac{1 + \tan^2 x}{\frac{1}{\cos^2 x}} \rightarrow 1 \cos x = \frac{1}{\cos^2 x} \rightarrow \cos^3 x = \frac{1}{1}$$



پاسخ ۲

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

$$5 \sin^2 x + 2 \cos^2 x = -2$$

$$5(1 - \cos^2 x) + 2(\cos^2 x - 3 \cos x) = -2$$

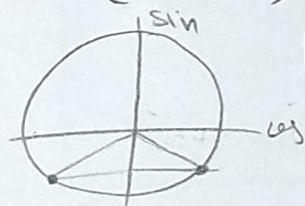
$$\cos x = t \rightarrow 11t^2 - 5t^2 - 4t + 7 = 0$$

$$t = -1$$

$$\cos x = -1 \rightarrow x = -\pi, \pi \quad \text{پاسخ ۲}$$

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

$$2 \sin x (1 - \sin^2 x) = 1 \rightarrow 2 \sin x - 2 \sin^3 x = 1 \rightarrow \sin x = t$$



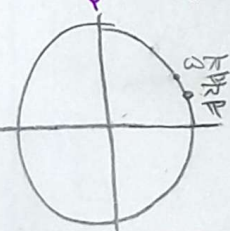
پاسخ ۲

پس از این سه مرحله است یعنی $0 < \sin x < 1$

$$-2t^3 + 2t - 1 = 0 \rightarrow f(t)$$

$$\sin\left(\frac{\pi}{4} + 2x\right) \rightarrow \cos 2x$$

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



$$\frac{1}{\cos 2x} + \frac{1}{-\sin 2x} = \frac{\sin 2x - \cos 2x}{\cos 2x \sin 2x} = 0$$

$$\sin 2x - \cos 2x = 0 \rightarrow \sin 2x = \cos 2x \rightarrow \sin 2x = \frac{1}{\sqrt{2}} \rightarrow 2x = 2k\pi + \frac{\pi}{4}$$

$$\cos\left(x + \frac{\pi}{4}\right) = \frac{1}{\sqrt{2}} \rightarrow \cos x = \frac{1}{\sqrt{2}} \rightarrow 2 \cos^2 x - 1 = \frac{1}{\sqrt{2}}$$

$$\cos\left(2x + \frac{\pi}{4}\right) = \pm \sin 2x = \pm \frac{1}{\sqrt{2}} \rightarrow m(\cos x - \sin x) = \sqrt{2} \left(\frac{1}{\sqrt{2}}\right) = \sqrt{2}$$

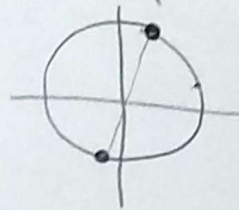
$$\sin\left(x + \frac{\pi}{4}\right) = \frac{\sqrt{2}}{2} \rightarrow \sin x - \cos x = \frac{-\sqrt{2}}{m} \rightarrow \frac{-\sqrt{2}}{m} = \sqrt{2} \sin\left(x + \frac{\pi}{4}\right)$$

$$\sin\left(x + \frac{\pi}{4}\right) \cos\left(x - \frac{\pi}{4}\right) = 1 \rightarrow \cos^2\left(x - \frac{\pi}{4}\right) = 1$$

$$\cos\left(\frac{\pi}{4} - x - \frac{\pi}{4}\right) \rightarrow \cos\left(\frac{\pi}{4} - x\right) \rightarrow \cos\left(x - \frac{\pi}{4}\right)$$

$$\cos\left(x - \frac{\pi}{4}\right) = \pm 1$$

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



$[0, 2\pi]$
جواب

از فرمول دل می بینیم: $\sin(x + \alpha) = \sqrt{2} \tan \alpha = \sqrt{2}$
 $\alpha = \frac{\pi}{4}$

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

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

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

جوابها: $[-\pi, \pi]$

$$-\frac{\pi}{2}, \frac{\pi}{2}, \frac{5\pi}{2}, \frac{7\pi}{2}$$

مجموعه
جواب

$$\sin x \times \sin\left(\frac{3\pi}{4} - x\right) = 1 \rightarrow 2(\sin x \cos x) = -1 \rightarrow \sin 2x = -\frac{1}{2}$$

$$\frac{13\pi}{12}, \frac{17\pi}{12}, \frac{5\pi}{12}, \frac{\pi}{12}$$

مجموعه: 3π

$$\left\{ \begin{array}{l} x = k\pi + \frac{\pi}{12} \\ x = k\pi + \frac{5\pi}{12} \end{array} \right.$$

$$(1 + \cos 2\alpha)(1 + \cos 4\alpha)(1 + \cos 8\alpha) = \frac{1}{8} \rightarrow 8 \cos^2 \alpha \cos^2 2\alpha \cos^2 4\alpha = \pm 1$$

$$\max [0, \pi] = \frac{8\pi}{9}$$

$$\frac{2k\pi}{9}, \frac{4k\pi}{9}$$

: α

$$\sin 8\alpha = \pm \sin \frac{\pi}{9}$$

$$\tan(3\pi) = \frac{1}{\tan(\pi)} \rightarrow \tan 3\pi = \cot x \rightarrow \tan 3\pi = \tan\left(\frac{\pi}{2} - x\right)$$

$$\frac{2k\pi}{9} + \frac{\pi}{9}$$

$$k\pi + \frac{\pi}{9} = 3\pi \leftarrow k\pi + \frac{\pi}{9} - \pi = 3\pi$$

جوابها: $\frac{9\pi}{9}, \frac{11\pi}{9}, \frac{13\pi}{9}, \frac{15\pi}{9} \rightarrow \frac{4\pi}{9}$