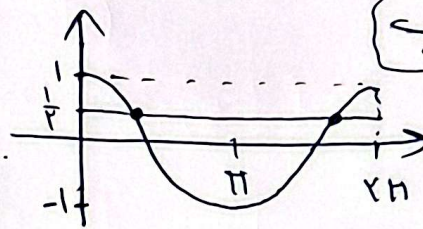


$$\Lambda \cos x = 1 + \tan^2 x \rightarrow \Lambda \cos x = \frac{1}{\cos^2 x} \rightarrow 1 = \Lambda \cos^3 x$$

$$\frac{1}{\Lambda} = \cos^3 x \rightarrow \cos x = \frac{1}{\Lambda}$$



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

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

$$\Lambda \cos^2 x - \Delta \cos^2 x - 2 \cos x + 2 = 0$$

$$\begin{cases} \cos x = -1 \\ \cos^2 x = 1 \\ \cos^3 x = -1 \end{cases}$$

۲ جواب

$$\Lambda + \Delta = 12$$

۲ جواب

$$\sin x (2 \cos^2 x + 1) = 1 \rightarrow \sin x (2 \cos^2 x - 2 \sin^2 x + \cos^2 x + \sin^2 x) = 1$$

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

$$\textcircled{1} \rightarrow \sin^3 x = \sin x = -1 \rightarrow 3 - 2 = 1 \rightarrow x = \frac{3\pi}{2}$$

$$\textcircled{2} \rightarrow 2 \cos^2 x - 3 \sin^2 x = \cos(2x) \rightarrow \cos x = \sin(\frac{\pi}{4} - x) \rightarrow x = \frac{\pi}{9}, \frac{4\pi}{9}$$

$$\sin(\frac{\pi}{4} + 2x) + \cos(\frac{\pi}{4} + 4x) = 0 \rightarrow \cos^2 x + \sin^2 x = 0$$

$$\cos^2 x = \sin^2 x \rightarrow \cos^2 x = 2 \sin^2 x \cos^2 x \rightarrow \sin^2 x = \frac{1}{2}$$

$$\tan(12) = -\sqrt{3}$$

$$\cos^2 x = 0$$

$$\sin^2 x = \frac{1}{2} \rightarrow x = 30^\circ, 150^\circ$$

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

$$(\cos x - \sin x)^2 = 1 - \sin^2 x = \frac{2}{2} \rightarrow \sin^2 x = \frac{1}{2}$$

$$\frac{\sqrt{2}m}{\sqrt{2}} - \sqrt{2} = \sqrt{2} \rightarrow 2\sqrt{2} = \frac{\sqrt{2}m}{\sqrt{2}} \rightarrow 2\sqrt{2} = \sqrt{2}m$$

$$\sin\left(x + \frac{\pi}{5}\right) \cos\left(x - \frac{\pi}{5}\right) = 1 \rightarrow \sin y = \cos y = \pm 1$$

$$\begin{aligned} \textcircled{1} &\rightarrow \sin\left(x + \frac{\pi}{5}\right) = 1 \rightarrow x = \frac{\pi}{5} + 2k\pi \\ \textcircled{2} &\rightarrow \sin\left(x + \frac{\pi}{5}\right) = -1 \rightarrow x = \frac{4\pi}{5} + 2k\pi \end{aligned} \left\{ \begin{array}{l} \text{تعداد جواب: 6} \end{array} \right.$$

$\textcircled{2}$ ✓

$$\begin{aligned} \sqrt{2} \sin\left(x + \frac{\pi}{5}\right) &= \sqrt{2} \rightarrow \sin\left(x + \frac{\pi}{5}\right) = \frac{\sqrt{2}}{\sqrt{2}} \rightarrow \sin\left(x + \frac{\pi}{5}\right) = \sin \frac{\pi}{4} \\ x + \frac{\pi}{5} &= \frac{\pi}{4} + 2k\pi \quad \text{و} \quad x + \frac{\pi}{5} = \frac{3\pi}{4} + 2k\pi \quad [-\pi, \pi] \rightarrow x = -\frac{\pi}{10}, \frac{3\pi}{10}, \frac{7\pi}{10}, \frac{11\pi}{10} \\ &\quad -\frac{\pi}{10} + 2k\pi \quad \frac{3\pi}{10} + 2k\pi \quad \left\{ \frac{9\pi}{10} = \text{مجموع} \right\} \end{aligned}$$

$\textcircled{2}$ ✓

$$\begin{aligned} \sin\left(\frac{3\pi}{4} - x\right) &= -\cos(x) \rightarrow -\sin x \cos x = 1 \rightarrow \sin x \cos x = -\frac{1}{2} \\ \frac{1}{2} \sin 2x &= -\frac{1}{2} \rightarrow \sin 2x = -\frac{1}{2} \rightarrow 2x = k\pi + \frac{\pi}{6}, 2k\pi - \frac{\pi}{6} \end{aligned}$$

$$\rightarrow x = \frac{k\pi}{2} + \frac{\pi}{12}, \frac{k\pi}{2} - \frac{\pi}{12} \quad \left\{ \begin{array}{l} x = \frac{5\pi}{12}, \frac{11\pi}{12}, \frac{17\pi}{12}, \frac{23\pi}{12} \\ \text{مجموع: } \frac{19\pi}{6} \end{array} \right.$$

$\textcircled{2}$ ✓

$$\begin{aligned} \sqrt{2} \cos^2 x \cdot \sqrt{2} \cos^2 x \cdot \sqrt{2} \cos^2 x &= \frac{1}{\sqrt{2}} \rightarrow \cos^2 x \cos^2 x \cos^2 x = \frac{1}{2\sqrt{2}} \\ |\cos x \cos x \cos x| &= \frac{1}{\sqrt{2}} \\ \sin(1x) &= \sin x \cos x \cos^2 x \cos^2 x \end{aligned} \left\{ \begin{array}{l} |\sin(1x)| = |\sin x| \\ \frac{1\pi}{9} = \text{بزرگ ترین عضو} \end{array} \right.$$

$$x = \frac{2k\pi}{9}, \frac{\pi + 2k\pi}{9}, \frac{2k\pi}{9}$$

$$\tan 2x = \frac{\sqrt{2} \tan x - \tan^2 x}{1 - \sqrt{2} \tan^2 x} \rightarrow \tan 2x \cdot \tan x = 1$$

$$\rightarrow \sqrt{2} \tan^2 x - \tan^4 x = 1 - \sqrt{2} \tan^2 x \rightarrow \tan^4 x - 2\sqrt{2} \tan^2 x + 1 = 0$$

$$\tan^2 x = \sqrt{2} \pm \sqrt{2} \rightarrow \tan x = \pm(\sqrt{2} + 1), \pm(\sqrt{2} - 1) \quad \left\{ \frac{4\pi}{9} = \text{مجموع} \right.$$

$$\tan \frac{\pi}{9} = \sqrt{2} - 1, \tan \frac{5\pi}{9} = \sqrt{2} + 1 \rightarrow x = \frac{\pi}{9}, \frac{4\pi}{9}, \frac{5\pi}{9}, \frac{8\pi}{9}$$