

$$\sec x = 1 + \tan^2 x \Rightarrow \sec x = \frac{1}{\cos x} \Rightarrow \sec^2 x = 1$$

$$\Rightarrow \cos x = \pm 1 \Rightarrow x = 2k\pi \pm \pi$$



زرد باب

✓

$$2 = \omega \left(\frac{\sin^2 x}{1 - \cos^2 x} + \frac{2 \cos^2 x}{1 - \cos^2 x} + 2 \right) \Rightarrow \sec^2 x - 2 \cos^2 x - 4 \cos x + 7 = 0$$

یک از ریشه ها ۱ است

جمع ضرایب زوج باضرایب فرد برابر است

$$\Rightarrow \cos x = 1 \Rightarrow 1t^2 - 2t^2 - 4t + 7 = 0 \Rightarrow (t+1)(1t^2 - 3t + 7) = 0 \Rightarrow \cos x = -1$$

$$\Rightarrow x = 2k\pi + \pi$$

✓

تقسیم قسری کردم

$$P \sin x (1 - 3 \sin^2 x) + \sin x = 1 \Rightarrow 3 \sin^2 x - 8 \sin x - 1 = 0$$

$$x = 0$$

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

$$x = \frac{3\pi}{4}$$

$$x = \frac{5\pi}{4}$$

$$\Rightarrow$$

$$\left. \begin{matrix} \frac{\pi}{4} \\ \frac{3\pi}{4} \\ \frac{5\pi}{4} \end{matrix} \right\} \text{مجموع جواب}$$

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$$\sin^2 x = 1 \Rightarrow \sin x = 1$$

$$\Rightarrow x = 2k\pi + \frac{\pi}{2}$$

$$\Rightarrow x = \frac{2k\pi}{2} + \frac{\pi}{2}$$

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

$$= \frac{\cos^2 x (\sin^2 x - 1)}{\sin^2 x \cos^2 x} = \frac{\sin^2 x - 1}{\sin^2 x} = 0 \Rightarrow \sin^2 x = 1 \Rightarrow \sin x = \pm 1$$

$$\Rightarrow 2x = \frac{\pi}{2} \Rightarrow \tan x = -\sqrt{2}$$

✓



$$\alpha = \frac{2\pi}{12} - \frac{\pi}{12} = \frac{\pi}{12} = \frac{\pi}{12}$$

$$\cos x \cos \frac{\pi}{2} - \sin x \sin \frac{\pi}{2} = \frac{1}{\sqrt{2}} \Rightarrow \cos x - \sin x = \frac{\sqrt{2}}{2} \Rightarrow \cos^2 x + \sin^2 x - \sin x = \frac{1}{2}$$

$$\Rightarrow m\left(\frac{\sqrt{2}}{2}\right) - n\sqrt{4}\left(\frac{1}{2}\right) = \sqrt{2}$$

$$m\frac{\sqrt{2}}{2} = \sqrt{2} \Rightarrow m = 4$$

✓

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

$$\Rightarrow \sin^2 x = \frac{1}{2}$$

$$\frac{1}{y} \sin x + \frac{1}{y} \cos x = \frac{\sqrt{2}}{y} \quad \sin\left(x + \frac{\pi}{4}\right) = \sin\left(\frac{\pi}{4}\right)$$

$$\Rightarrow x + \frac{\pi}{4} = 2k\pi + \frac{\pi}{4} \quad \text{و } x + \frac{\pi}{4} = 2k\pi + \frac{5\pi}{4}$$

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

$$\Rightarrow \underbrace{-\frac{\pi}{12}, \frac{13\pi}{12}}_{\frac{12\pi}{12}} \quad \textcircled{+} \quad \underbrace{-\frac{5\pi}{12}, \frac{7\pi}{12}}_{\frac{12\pi}{12}} \quad \frac{12}{12} = \frac{12\pi}{12} = \frac{9\pi}{12}$$

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

$$\Rightarrow \cos\left(\frac{\pi}{4} - x\right) = 1 \Rightarrow x = 2k\pi + \frac{\pi}{4}$$

$$\Rightarrow \cos\left(\frac{\pi}{4} - x\right) = -1 \Rightarrow x = 2k\pi - \frac{\pi}{4} \quad \left. \begin{array}{l} \Rightarrow x = k\pi + \frac{\pi}{4} \\ \frac{\pi}{4}, \frac{5\pi}{4} \end{array} \right\}$$

$$\sin\left(\frac{5\pi}{4} - x\right) = -\cos x$$

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

$$\Rightarrow 2x = 2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6} \Rightarrow x = k\pi + \frac{7\pi}{12}, k\pi + \frac{11\pi}{12}$$

$$\frac{7\pi}{12} + \frac{11\pi}{12} = \frac{18\pi}{12} = \frac{3\pi}{2}$$

$$(1 + \cos 4\alpha)(1 + \cos 8\alpha)(1 + \cos 16\alpha) = \frac{1}{\Lambda} \Rightarrow \frac{\Lambda}{\sin^4 \alpha} (\sin^2 \alpha \cos^2 \alpha \dots) = \frac{1}{\Lambda}$$

$$\frac{\Lambda}{\sin^4 \alpha} \left(\frac{1}{2} \sin^2 \alpha \cos^2 \alpha \dots\right) \Rightarrow \frac{\Lambda}{\sin^4 \alpha} = \frac{1}{16} \sin^2 \alpha \cos^2 \alpha = \frac{1}{\Lambda}$$

$$\Rightarrow \sin^4 \alpha = \sin^4 \alpha \quad \left\{ \begin{array}{l} \Lambda\alpha = 2k\pi + \alpha \Rightarrow \alpha = \frac{2k\pi}{\Lambda} \\ \Lambda\alpha = 2k\pi + \pi - \alpha \Rightarrow \alpha = \frac{2k\pi}{\Lambda} + \frac{\pi}{2} \\ \Lambda\alpha = 2k\pi - \alpha \Rightarrow \alpha = \frac{2k\pi}{\Lambda} \\ \Lambda\alpha = 2k\pi + \pi + \alpha \Rightarrow \alpha = \frac{2k\pi}{\Lambda} + \frac{\pi}{2} \end{array} \right.$$

$$\max(A) = 9 - \frac{\sqrt{2}}{2}$$

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

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

$$x \neq k\pi + \frac{\pi}{2} \quad \checkmark$$

$$x \neq k\pi + \frac{\pi}{4} \Rightarrow x \neq \frac{k\pi}{2} + \frac{\pi}{4} \quad \checkmark$$



$$\Rightarrow \text{مجموع} = 9\pi$$