

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

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



در جواب

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

یک از ریشه ها ۱ است

(جمع ضرایب زوج باضرایب فرد برابر است)

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

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

سه تقسیم قسری کردم

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$$2 \sin^2 x (1 - \sin^2 x) + \sin^2 x - 1 = 0 \Rightarrow 2 \sin^2 x - 2 \sin^4 x - 1 = 0$$

$$\sin^2 x = 1 \Rightarrow \sin x = \pm 1 \Rightarrow x = 2k\pi + \pi$$

=>

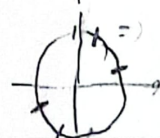
$$\Rightarrow x = \frac{2k\pi}{2} + \frac{\pi}{2}$$

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

$$= \frac{\cos^2 x (\sin^2 x - 1)}{\sin^2 x \cos^2 x} = \frac{\sin^2 x - 1}{\sin^2 x} = 0 \Rightarrow \sin^2 x = 1 \Rightarrow \sin x = \pm 1 \Rightarrow x = 2k\pi + \pi, 2k\pi + \frac{3\pi}{2}$$

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



$$\alpha = \frac{3\pi}{4} - \frac{\pi}{4} = \frac{2\pi}{4} = \frac{\pi}{2}$$

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

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

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

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

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$\frac{1}{p} \sin x + \frac{1}{p} \cos x = \frac{\sqrt{2}}{p} \quad \sin\left(x + \frac{\pi}{4}\right) = \sin\left(\frac{\pi}{4}\right)$ $\Rightarrow x + \frac{\pi}{4} = 2k\pi + \frac{\pi}{4} \quad \text{و } x + \frac{\pi}{4} = 2k\pi + \frac{5\pi}{4}$ $\Rightarrow x = 2k\pi - \frac{\pi}{4} \quad x = 2k\pi + \frac{3\pi}{4}$ $\Rightarrow \underbrace{-\frac{\pi}{4}, \frac{3\pi}{4}}_{\frac{11\pi}{4}} \quad \oplus \quad \underbrace{-\frac{5\pi}{4}, \frac{7\pi}{4}}_{\frac{11\pi}{4}} \quad \frac{11\pi}{4} = \frac{22\pi}{8} = \frac{11\pi}{4}$	✓												
$\cos\left(\frac{\pi}{2} - x\right) = \sin\left(x + \frac{\pi}{4}\right) \Rightarrow \cos\left(\frac{\pi}{2} - x\right) = 1$ $\Rightarrow \cos\left(\frac{\pi}{2} - x\right) = 1 \Rightarrow x = 2k\pi + \frac{\pi}{4}$ $\Rightarrow \cos\left(\frac{\pi}{2} - x\right) = -1 \Rightarrow x = 2k\pi - \frac{\pi}{4}$ $\bigcirc$ $x = k\pi + \frac{\pi}{4}$ ✓ $\frac{\pi}{4}, \frac{5\pi}{4}$	✓												
$\sin\left(\frac{3\pi}{4} - x\right) = -\cos x$ $-\sin x \cos x = 1 \Rightarrow -\sin 2x = 1 \Rightarrow \sin 2x = -\frac{1}{2}$ $\bigcirc$ $\Rightarrow 2x = 2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6} \Rightarrow x = k\pi + \frac{7\pi}{12}, k\pi + \frac{11\pi}{12}$ $\frac{7\pi}{12} + \frac{11\pi}{12} = \frac{18\pi}{12} = \frac{3\pi}{2}$	✓												
$(1 + \cos 4\alpha)(1 + \cos 8\alpha)(1 + \cos 16\alpha) = \frac{1}{\Lambda} \Rightarrow \frac{\Lambda}{\sin^4 \alpha} (\sin^2 \alpha \cos^2 \alpha \dots) = \frac{1}{\Lambda}$ $\frac{\Lambda}{\sin^4 \alpha} \left(\frac{1}{2} \sin^2 \alpha \cos^2 \alpha \dots\right) \Rightarrow \frac{\Lambda}{\sin^4 \alpha} = \frac{1}{14} \sin^2 \alpha \cos^2 \alpha = \frac{1}{\Lambda}$ $\Rightarrow \sin^4 \alpha = \sin^2 \alpha \begin{cases} \Lambda\alpha = 2k\pi + \alpha \Rightarrow \alpha = \frac{2k\pi}{\Lambda} \\ \Lambda\alpha = 2k\pi + \pi - \alpha \Rightarrow \alpha = \frac{2k\pi}{\Lambda} + \frac{\pi}{2} \\ \Lambda\alpha = 2k\pi - \alpha \Rightarrow \alpha = \frac{2k\pi}{\Lambda} \\ \Lambda\alpha = 2k\pi + \pi + \alpha \Rightarrow \alpha = \frac{2k\pi}{\Lambda} + \frac{\pi}{2} \end{cases}$	9												
$\tan(2x) \tan(x) = 1 \xrightarrow{\tan 2x} \tan 2x = \cot x \Rightarrow \tan 2x = \tan\left(\frac{\pi}{2} - x\right)$ $\Rightarrow 2x = k\pi + \frac{\pi}{2} - x \Rightarrow 3x = k\pi + \frac{\pi}{2} \Rightarrow x = \frac{k\pi}{3} + \frac{\pi}{6}$ $\bigcirc$ <table> <tr> <td>k</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>x</td> <td>$\frac{\pi}{6}$</td> <td>$\frac{5\pi}{6}$</td> <td>$\frac{7\pi}{6}$</td> <td>$\frac{11\pi}{6}$</td> <td>$\frac{3\pi}{2}$</td> </tr> </table>	k	1	2	3	4	5	x	$\frac{\pi}{6}$	$\frac{5\pi}{6}$	$\frac{7\pi}{6}$	$\frac{11\pi}{6}$	$\frac{3\pi}{2}$	1.
k	1	2	3	4	5								
x	$\frac{\pi}{6}$	$\frac{5\pi}{6}$	$\frac{7\pi}{6}$	$\frac{11\pi}{6}$	$\frac{3\pi}{2}$								