

$$\Lambda \cos u - \tan^2 u = 1 \Rightarrow \Lambda \cos u - \frac{\sin^2 u}{\cos^2 u} = 1$$

$$\Lambda (\cos^3 u - \sin^2 u) = \cos^3 u \quad \frac{\Lambda (\cos^3 u - \sin^2 u)}{\cos^3 u} = 1$$

$$\sin^2 u = 1 - \cos^2 u \Rightarrow \Lambda (\cos^3 u - 1 + \cos^2 u) = \cos^3 u \Rightarrow \Lambda (\cos^2 u - 1) = 0 \Rightarrow \cos^2 u = 1$$

$$\Delta \sin^2 u + \gamma (\cos^3 u - 1) = -\gamma \Rightarrow \Delta \sin^2 u + \gamma (1 + \cos^3 u) = 0$$

$$\Rightarrow \Delta \sin^2 u = 0 \Rightarrow \sin^2 u = 0 \Rightarrow u = k\pi = -\pi, 0, \pi$$

$$\Rightarrow \gamma (\cos^3 \frac{u}{\gamma} = 0 \Rightarrow \cos^3 \frac{u}{\gamma} = 0 \Rightarrow \frac{u}{\gamma} = k\pi + \pi/2 \Rightarrow u = \frac{\gamma k\pi}{\gamma} + \frac{\pi}{2} = k\pi + \frac{\pi}{2}$$

$$\gamma \sin(u) (\cos(u)) + \sin(u) = 1 \Rightarrow \gamma \sin u - \gamma \sin^3 u = 1 \Rightarrow \sin^3 u = 1 \Rightarrow \sin u = 1$$

$$\Rightarrow u = \gamma k\pi + \pi/2 \Rightarrow u = \frac{\gamma k\pi}{\gamma} + \pi/2 \Rightarrow u = \frac{\pi}{2}, \frac{5\pi}{2}, \frac{9\pi}{2}, \dots$$

$$\frac{1}{\sin(\frac{\pi}{\gamma} + \gamma u)} + \frac{1}{\cos(\frac{\pi}{\gamma} + \gamma u)} = 0 \Rightarrow \frac{1}{\cos \gamma u} + \frac{1}{-\sin \gamma u} = 0$$

$$\cos \gamma u = \gamma \sin \gamma u \Rightarrow \cos \gamma u = \sin \gamma u \Rightarrow \frac{1}{\cos \gamma u} = \frac{1}{\sin \gamma u}$$

$$\Rightarrow \tan \gamma u = 1 \Rightarrow \gamma u = \frac{\pi}{4} \Rightarrow u = \frac{\pi}{4\gamma}$$

$$m (\cos u - \sin u) - \gamma \sqrt{2} \sin(\gamma u) = \sqrt{2}$$

$$\gamma \sin \gamma u \cos \gamma u$$

$$m \frac{\sqrt{2}}{\gamma} - \gamma \sqrt{2} (\gamma \frac{1}{\gamma}) = \sqrt{2}$$

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

$$\frac{1}{\gamma} = \sin \gamma u \cos \gamma u$$

$$\frac{\sqrt{2}}{\gamma} (\cos \gamma u - \sin \gamma u) = \frac{1}{\gamma}$$

$$\cos \gamma u - \sin \gamma u = \frac{\sqrt{2}}{\gamma} \Rightarrow \cos^2 \gamma u + \sin^2 \gamma u = \frac{2}{\gamma^2}$$

$$\sin\left(m + \frac{\pi}{4}\right) \cos\left(m - \frac{\pi}{4}\right) = 1 \rightarrow \cos\left(\frac{\pi}{4} - \left(m + \frac{\pi}{4}\right)\right) \times \cos\left(m - \frac{\pi}{4}\right) = 1$$

$$\Rightarrow \cos\left(\frac{\pi}{4} - m\right) \times \cos\left(m - \frac{\pi}{4}\right) = 1 \rightarrow \cos^2\left(m - \frac{\pi}{4}\right) = 1 \rightarrow \cos\left(m - \frac{\pi}{4}\right) = \pm 1$$

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روشنه

30 Sep. 2024

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ربیع الاول

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

$$\cos\left(m - \frac{\pi}{4}\right) = -1 \rightarrow m - \frac{\pi}{4} = 2(k\pi + \pi) \rightarrow m = 2k + \frac{9\pi}{4}$$

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جواب ۲

$$\frac{1}{2} \times \sin m + \sqrt{2} \cos m = \sqrt{2} \quad \text{ضرب کنیم} \quad \sin^2 m + 2 \cos^2 m = 2 \Rightarrow \cos^2 m = 1$$

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

$$\text{باز} \Rightarrow [-\pi/2, \pi/2]$$

$$\frac{\pi}{4} \leq m + \frac{\pi}{4} \leq \frac{3\pi}{4} \quad \text{و} \quad \frac{5\pi}{4} \leq m + \frac{\pi}{4} \leq \frac{7\pi}{4}$$

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$$\begin{aligned} m + \frac{\pi}{4} &= 2k\pi + \frac{\pi}{4} & m - \frac{\pi}{4} &= 2k\pi - \frac{\pi}{4} \\ m &= 2k\pi & m &= 2k\pi + \frac{\pi}{2} \end{aligned}$$

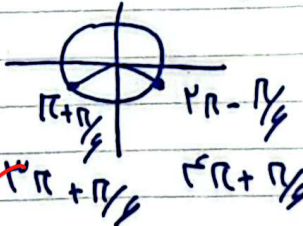
$$\sqrt{2} \sin m \sin\left(\frac{3\pi}{4} - m\right) = 1 \rightarrow \sqrt{2} \sin m \times \frac{1}{\sqrt{2}} = 1 \Rightarrow \sin m \cos m = \frac{1}{2}$$

$$\Rightarrow \frac{\sin 2m}{2} = \frac{1}{2} \Rightarrow \sin 2m = 1$$

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$$\text{باز: } \frac{\pi}{2} \leq 2m \leq \frac{3\pi}{2} \Rightarrow \frac{\pi}{4} \leq m \leq \frac{3\pi}{4}$$

$$\frac{\pi}{4} \leq m \leq \frac{3\pi}{4} \Rightarrow \text{در بازه } \frac{\pi}{4} \text{ تا } \frac{3\pi}{4}$$



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

$$+ \frac{1}{4} \sin^2 \alpha = \frac{1}{4} \sin^2 \alpha \cos^2 \alpha = \sin^2 \alpha \cos^2 \alpha \cos^2 2\alpha \cos^2 4\alpha$$

$$\sin 8\alpha = \pm \sin \alpha \rightarrow \begin{aligned} 8\alpha &= 2k\pi + \alpha \rightarrow \alpha = \frac{7\pi}{7} \\ 8\alpha &= 2k\pi - \alpha \rightarrow \alpha = \frac{2\pi}{7} \end{aligned}$$

$$\sin 8\alpha = -\sin \alpha \rightarrow \begin{aligned} 8\alpha &= 2k\pi - \alpha \rightarrow \alpha = \frac{9\pi}{9} \rightarrow \frac{\pi}{9} \\ 8\alpha &= 2k\pi + \pi - \alpha \rightarrow \alpha = \frac{2\pi}{9} + \frac{\pi}{9} \rightarrow \frac{\pi}{9} \end{aligned}$$

$M_{\alpha} = \frac{\pi}{9}$

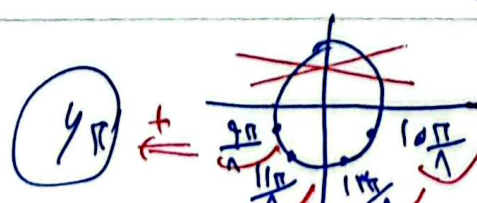
$$\tan(\pi m) \tan(\pi n) = 1 \Rightarrow \tan(\pi m) = \frac{1}{\tan(\pi n)}$$

$$\pi m = k\pi + \frac{\pi}{4} - \pi n$$

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$$\pi m = k\pi + \frac{\pi}{4} \rightarrow m = \frac{k\pi}{\pi} + \frac{1}{4}$$

روز هفستکی و همدردی با کودکان و نوجوانان فلسطینی



باز: $[\pi/4, \pi/2]$