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

$$\rightarrow x = 2k\pi \pm \frac{\pi}{\sqrt{\Lambda}} \quad \bigoplus \rightarrow \text{دو جواب} \quad [0, 2\pi]$$

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$$2 \sin^2 x + \sqrt{2} \cos^3 x = -\sqrt{2} \rightarrow 2 \sin^2 x + \Lambda \cos^3 x - \sqrt{2} \cos x = -\sqrt{2}$$

$$\rightarrow \Lambda \cos^3 x - \sqrt{2} \cos x - 2 \cos^2 x + \sqrt{2} = 0 \rightarrow \cos x = -1 \rightarrow \cos x = -1 \rightarrow \bigoplus \quad [-\pi, \pi]$$

این معادله دارای دو جواب می باشد

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

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

$$\underline{\cos^2 x = 1 - \sin^2 x} \rightarrow \sin x (\sqrt{2} - (\sin^2 x)) = 1 \rightarrow \sqrt{2} \sin x - (\sin^3 x) - 1 = 0$$

$$\rightarrow (\sin^3 x - \sqrt{2} \sin x + 1) = 0 \quad \begin{cases} \sin x = -1 \\ \sin x = \frac{1}{\sqrt{2}} \end{cases}$$



$$\frac{\pi}{4} + 2k\pi - \frac{\pi}{4} + \frac{\pi}{4} = k + \frac{\pi}{4} = \frac{0 + \pi}{4}$$

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$$\frac{1}{\sin(\frac{\pi}{y} + \gamma n)} + \frac{1}{\cos(\frac{\pi}{y} + \gamma n)} = 0 \rightarrow \frac{1}{\cos \gamma n} + \frac{1}{-\sin \gamma n} = 0 \rightarrow \frac{\sin \gamma n - \cos \gamma n}{\sin \gamma n \cdot \cos \gamma n} = 0$$

$$\rightarrow \sin \gamma n - \cos \gamma n = 0, \sin \gamma n \cdot \cos \gamma n \neq 0$$

① ②

$$\textcircled{1} \sin \gamma n = \cos \gamma n \rightarrow \sin \gamma n = \sin(\frac{\pi}{y} + \gamma n) \rightarrow \gamma n = \gamma k n + \frac{\pi}{y} + \gamma n \rightarrow n = k n + \frac{\pi}{y}$$

$$\rightarrow \gamma n = \gamma k n + n - \frac{\pi}{y} - \gamma n \rightarrow n = \frac{k n}{y} + \frac{\pi}{y}$$

$$\textcircled{2} \cos \gamma n \neq 0 \rightarrow \gamma n \neq k n + \frac{\pi}{y} \rightarrow n \neq \frac{k n}{y} + \frac{\pi}{y}$$

$$\sin \gamma n \neq 0 \rightarrow \gamma n \neq k n \rightarrow n \neq \frac{k n}{y}$$

$$\textcircled{1} \textcircled{2} \rightarrow n = \frac{k n}{y} + \frac{\pi}{y} \xrightarrow{\text{نقل } \frac{k n}{y} \text{ لـ اليمين}} n = \frac{\pi}{y}, \frac{dn}{dy} \rightarrow \alpha = \frac{f n}{y} = \frac{\pi}{y}$$

لو كان $\frac{k n}{y}$ جزء من n لو كان $\frac{dn}{dy}$ اختلاف جواب

$$\tan \frac{\gamma n}{y} = \tan(n - \frac{\pi}{y}) = -\tan \frac{\pi}{y} = -\sqrt{y}$$

$$\cos(n + \frac{\pi}{y}) = \frac{1}{\sqrt{y}} \rightarrow \frac{\sqrt{y}}{y} (\cos n - \sin n) = \frac{1}{\sqrt{y}} \rightarrow \cos n - \sin n = \frac{y}{\sqrt{y}} \textcircled{1}$$

$$\xrightarrow{\text{لو ضربنا}} \underbrace{\cos \gamma n + \sin \gamma n}_1 - \gamma \cos n - \sin n = \frac{1}{y} \rightarrow \sin \gamma n = \frac{1}{y} \textcircled{2}$$

$$m(\cos n - \sin n) - y \sqrt{y} \sin \gamma n = \sqrt{y} \xrightarrow{\textcircled{1}, \textcircled{2}} m(\frac{y}{\sqrt{y}}) - y \sqrt{y} \times \frac{1}{y} = \sqrt{y}$$

$$\times \sqrt{y} \rightarrow y m - y = y \rightarrow y m = 1 y \rightarrow m = 1$$

(1, 1)

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

$$\rightarrow \frac{1}{y} \sin x + \sqrt{\frac{y}{y}} \cos x = \pm 1 \rightarrow \sin\left(x + \frac{\pi}{y}\right) = \pm 1 \rightarrow \begin{cases} x + \frac{\pi}{y} = yk\pi + \frac{\pi}{y} \\ x + \frac{\pi}{y} = yk\pi - \frac{\pi}{y} \end{cases}$$

$$\rightarrow x = yk\pi + \frac{\pi}{y}$$

$$x = yk\pi - \frac{\pi}{y}$$



جواب

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$$\sin x + \sqrt{y} \cos x = \sqrt{y} \rightarrow y\left(\frac{1}{y} \sin x + \sqrt{\frac{y}{y}} \cos x\right) = \sqrt{y}$$

$$\rightarrow \sin\left(x + \frac{\pi}{y}\right) = \sqrt{\frac{y}{y}} \rightarrow \sin\left(x + \frac{\pi}{y}\right) = \sin \frac{\pi}{y} \rightarrow \begin{cases} x + \frac{\pi}{y} = yk\pi + \frac{\pi}{y} \\ x + \frac{\pi}{y} = yk\pi + \pi - \frac{\pi}{y} \end{cases}$$

$$\rightarrow x = yk\pi - \frac{\pi}{y} \xrightarrow{k \rightarrow \infty} -\frac{\pi}{y}, \frac{y\pi}{y}$$

$$\rightarrow x = yk\pi + \frac{\pi}{y} \xrightarrow{k \rightarrow 0} \frac{\pi}{y} \xrightarrow{\text{L'H}} \frac{y\pi}{y} + \frac{\pi}{y} = \frac{y\pi}{y}$$

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$$f \sin x \cdot \sin\left(\frac{y\pi}{y} - x\right) = 1 \rightarrow f \sin x \cdot \sin\left(\pi - x\right) = 1$$

$$\rightarrow y \sin x \cdot \cos x = -\frac{1}{y}$$

$$\rightarrow \sin yx = -\frac{1}{y} \rightarrow yx = yk\pi - \frac{\pi}{y} \rightarrow x = k\pi - \frac{\pi}{y} \xrightarrow{k=1, y} \pi - \frac{\pi}{y}, y\pi - \frac{\pi}{y}$$

$$\rightarrow yx = yk\pi + \pi + \frac{\pi}{y} \rightarrow x = k\pi + \frac{\pi}{y} \xrightarrow{k \rightarrow \infty} \frac{y\pi}{y}, \pi + \frac{\pi}{y}$$

$$\xrightarrow{\text{L'H}} f\pi + \frac{y\pi}{y} - \frac{\pi}{y} = \frac{y\pi}{y}$$

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$$(\sin^2 \alpha + \cos^2 \alpha + \cos^2 \alpha - \sin^2 \alpha) (\sin^2 \alpha + \cos^2 \alpha + \cos^2 \alpha - \sin^2 \alpha) (\sin^2 \alpha + \cos^2 \alpha + \cos^2 \alpha - \sin^2 \alpha) = \frac{1}{\lambda^3}$$

$$\rightarrow \gamma \cos^2 \alpha \times \gamma \cos^2 \alpha \times \gamma \cos^2 \alpha = \frac{1}{\lambda} \rightarrow \cos^2 \alpha \times \cos^2 \alpha \times \cos^2 \alpha = \frac{1}{\gamma^3}$$

$$\times \sin^2 \alpha \rightarrow \frac{1}{\gamma} \underbrace{\sin^2 \alpha \times \cos^2 \alpha \times \cos^2 \alpha}_{\frac{1}{\gamma} \sin^2 \alpha} = \frac{1}{\gamma^3} \times \sin^2 \alpha \rightarrow \frac{1}{\gamma^3} \sin^2 \alpha = \frac{1}{\gamma^3} \times \sin^2 \alpha$$

$$\rightarrow \sin^2 \Lambda \alpha = \sin^2 \alpha \rightarrow \sin \Lambda \alpha = \sin \alpha \rightarrow \begin{cases} \Lambda \alpha = \gamma k \pi + \pi - \alpha \\ \Lambda \alpha = \gamma k \pi + \alpha \end{cases}$$

$$\rightarrow \sin \Lambda \alpha = -\sin \alpha \rightarrow \sin (\Lambda \alpha) = \sin (\pi + \alpha) \rightarrow \begin{cases} \Lambda \alpha = \gamma k \pi + \pi - \alpha \\ \Lambda \alpha = \gamma k \pi + \pi + \alpha \end{cases}$$

$$\alpha = \frac{\gamma k \pi}{\gamma} + \frac{\pi}{\gamma} \rightarrow \kappa = \gamma' = \frac{\gamma \pi}{\alpha}$$

$$\alpha = \frac{\gamma k \pi}{\gamma} \rightarrow \boxed{\frac{\gamma k \pi}{\gamma}} \rightarrow \boxed{\frac{\pi k}{\gamma}} \quad A = \left\{ 0, \frac{\pi}{\gamma}, \frac{2\pi}{\gamma}, \frac{3\pi}{\gamma}, \frac{4\pi}{\gamma}, \frac{5\pi}{\gamma}, \frac{6\pi}{\gamma}, \frac{7\pi}{\gamma} \right\}$$

$$\alpha = \frac{\gamma k \pi}{\gamma} \rightarrow \kappa = \gamma' \rightarrow \frac{\gamma \pi}{\alpha}$$

$$\alpha = \frac{\gamma k \pi}{\gamma} + \frac{\pi}{\gamma} \rightarrow \kappa = \gamma' \rightarrow \frac{\gamma \pi}{\alpha}$$

$$\tan(\gamma n) \cdot \tan n = 1 \rightarrow \frac{\sin \gamma n \cdot \sin n}{\cos \gamma n \cdot \cos n} = 1 \rightarrow \sin \gamma n \cdot \sin n = \cos \gamma n \cdot \cos n$$

$$\rightarrow \cos \gamma n \cdot \cos n - \sin \gamma n \cdot \sin n = 0 \rightarrow \cos \pi n = 0 \rightarrow \pi n = \gamma k \pi \pm \frac{\pi}{\gamma}$$

$$\rightarrow n = \frac{k \pi}{\gamma} \pm \frac{\pi}{\gamma} \xrightarrow{[n, \gamma n]} n = \frac{k \pi}{\gamma} + \frac{\pi}{\gamma} \xrightarrow{k=1, 3, 5} \pi + \frac{\pi}{\gamma}, \frac{3\pi}{\gamma}, \frac{5\pi}{\gamma}$$

$$n = \frac{k \pi}{\gamma} - \frac{\pi}{\gamma} \xrightarrow{k=2, 4, 6} \frac{2\pi}{\gamma}, \frac{4\pi}{\gamma}, \frac{6\pi}{\gamma}$$

$$\xrightarrow{\text{حاصل کردن}} \cos \gamma n, \cos n \neq 0 \rightarrow n = \frac{\pi}{\gamma}, \frac{3\pi}{\gamma}, \frac{5\pi}{\gamma}, \frac{7\pi}{\gamma}$$

$$\xrightarrow{\text{مجموع جواب}} \frac{\pi n}{\gamma} = \boxed{\gamma n}$$

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