

$$1) \cos^2 m = r \sin m - 1 \quad (1)$$

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$$1 - \sin^2 m - r \sin m + 1 = 0 \Rightarrow -r^2 - r + 2 = 0 \quad \Delta = 9 - 4(-1)(2) = 17$$

$$r = \frac{1 \pm \sqrt{17}}{-2} = -r = \sin m \quad \alpha = \frac{\pi}{4} \quad r = r \cos \frac{\pi}{4} + \frac{17}{4} \Rightarrow r \cos \frac{\pi}{4} + \frac{17}{4} = \frac{17}{4}$$

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$$\Rightarrow \cos^2 m + \cos m - r = 0$$

$$r \cos^2 m - 1 + \cos m - r = 0 \Rightarrow r^2 + r - r = 0 \quad \Delta = 1 - 4(r)(-1) = 4r$$

$$r = \frac{-1 \pm \sqrt{4r}}{2} = 1 - \cos m \Rightarrow m = 2k\pi \quad r = \frac{-1 \pm \sqrt{4r}}{2} = \frac{r}{2} \quad \times$$

$$10) \sin^2 m - \cos^2 m = \sin m \quad (2)$$

$$(\sin^2 m + \cos^2 m)(\sin^2 m - \cos^2 m) = \sin m$$

$$-\cos^2 m \quad r \sin m \cdot \cos m \Rightarrow r \sin m = -1$$

$$\sin m = -\frac{1}{r} \quad \alpha = -\frac{\pi}{4}$$

$$r \cos^2 m = \frac{17}{4} \Rightarrow m = k\pi - \frac{\pi}{4}$$

$$r \sin^2 m = \frac{17}{4} \Rightarrow m = k\pi + \frac{\pi}{4}$$

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$$\Rightarrow r \cos^2 m + r \sin m \cdot \cos m = 1 \Rightarrow r \cos^2 m - 1 + r \sin m \cdot \cos m = 0$$

$$\cos^2 m + \sin m = 0 \quad \cos^2 m = \sin(-m)$$

$$\sin\left(\frac{17}{4} - m\right) = \sin(-m) \Rightarrow -m = 2k\pi + \frac{\pi}{4} - m \quad \times$$

$$-m = 2k\pi + \pi - \frac{17}{4} + m \Rightarrow -2m = 2k\pi + \frac{17}{4}$$

$$20 \quad m = -k\pi - \frac{17}{8}$$

$$11) \cos(r \cos m + 1) = \frac{1}{\sin m} \Rightarrow \frac{\cos m}{\sin m} (r \cos m + 1) = \frac{1}{\sin m}$$

$$r \cos^2 m + \cos m - 1 = 0 \Rightarrow r^2 + r - 1 = 0 \quad \Delta = 1 - 4(r)(-1) = 4r + 1$$

$$r = \frac{-1 \pm \sqrt{4r+1}}{2} = \cos m \Rightarrow r = 2k\pi \pm \frac{17}{4}$$

25 **پس جواب غیر قابل قبول مقبول مرشد****پس جواب غیر قابل قبول مقبول مرشد**

$$\Rightarrow r \sin^2 m - \sin m \cdot \cos m + \cos^2 m = r$$

$$\sin^2 m + \sin^2 m + \cos^2 m - \sin m \cdot \cos m = r \Rightarrow \sin^2 m - \sin m \cdot \cos m = 1$$

$$-\sin m \cdot \cos m - \cos^2 m = 0$$

$$-\sin m \cdot \cos m = 1 - \sin^2 m$$

$$30 \cos m (-\sin m - \cos m) = 0 \Rightarrow \cos m = 0 \quad m = 2k\pi + \frac{\pi}{2}$$

$$\Rightarrow -\sin m = \cos m \Rightarrow k\pi - \frac{\pi}{2}$$

$$k\pi + \frac{\pi}{2}$$

PAYCO

$$\cos\left(\frac{\pi}{r} + m\right) \cos\left(m - \frac{\pi}{r}\right) = \frac{1}{r} \quad (c)$$

$$\frac{\cos\left(\frac{\pi}{r} + m\right)}{\sin\left(\frac{\pi}{r} + m\right)} \Rightarrow \frac{1}{r} \sin\left(\frac{\pi}{r} + m\right) = \frac{1}{r}$$

$$\cos m \leq \frac{1}{r} \quad m \leq r k \pi \pm \frac{\pi}{r}$$

$$\alpha \leq \frac{\pi}{r} \rightarrow m \leq k r \pm \frac{\pi}{r}$$

$$\Rightarrow \cos\left(m - \frac{\pi}{r}\right) = \frac{\sin m}{\sin\left(-m\right)} \quad m - \frac{\pi}{r} = r k \pi + \frac{\pi}{r} + m \quad \times$$

$$\cos\left(\frac{\pi}{r} + m\right) \quad m - \frac{\pi}{r} = r k \pi - \frac{\pi}{r} - m \Rightarrow \cos r k \pi = \frac{\sqrt{r}}{1/r}$$

$$\alpha = \frac{k r}{r} - \frac{\sqrt{r}}{r}$$

$$\sin \epsilon m + \sin r m = \cos r m + \sin m \Rightarrow \sin \epsilon m + \sin m + \sin m \quad (d) 10$$

بازای بعضی مقادیر k مفروضه صفر می شود

$$\sin \epsilon m = 0 \quad \epsilon m \leq k r \quad \alpha \leq \frac{k r}{r}$$

$$\frac{\sin \frac{m}{r}}{1 + \cos \frac{m}{r}} = \frac{1}{\sin \frac{m}{r}} + \frac{\cot \frac{\alpha}{r}}{\frac{\cos \frac{m}{r}}{\sin \frac{m}{r}}} \rightarrow \frac{\sin \frac{\alpha}{r} \cdot \cos \frac{m}{r}}{\cos \frac{m}{r}} = \tan \frac{m}{r} \quad (1.5) \quad (4)$$

$$\frac{1 + \cos \frac{\alpha}{r}}{\sin \frac{\alpha}{r}} = \frac{r \cos \frac{m}{r}}{r \sin \frac{m}{r} \cdot \cos \frac{m}{r}} = \cot \frac{m}{r} \quad \tan \frac{m}{r} = \cot \frac{m}{r} \quad \tan\left(\frac{\pi}{r} - \frac{m}{r}\right)$$

$$\frac{\alpha}{r} \leq k r + \frac{\pi}{r} - \frac{\pi}{r} \rightarrow \frac{\alpha}{r} \leq k r \pm \frac{\pi}{r} \quad k \leq 1 \quad \left| \pi - (-\pi) \right| = r k$$

$$\cos r m - \sin r m \cdot \cos r m = 1$$

$$\frac{\sin r m \cdot \cos r m}{\sin r m} = 1 - \cos r m \Rightarrow -\sin r m \cdot \cos r m - \sin r m = 0$$

$$-\sin r m (\cos r m + 1) = 0 \quad \sin r m = 0 = k r \pi - \frac{\pi}{r}$$

$$\cos r m = -1$$

$$r m \leq r k \pi + \pi$$

$$\alpha \leq \frac{r k \pi}{r} + \frac{\pi}{r} \quad \frac{\pi}{r} \quad \frac{\pi}{r} \quad \frac{\pi}{r}$$

$$\sqrt{1 + \sin m} = \sqrt{r \cos m} \quad (1.9)$$

$$1 + \sin m = r \cos^2 m$$

$$\sin m = \frac{r \cos^2 m - 1}{\cos^2 m} \rightarrow \cos^2 m = \cos\left(\frac{\pi}{r} - m\right)$$

$$\epsilon m \leq r k \pi + \frac{\pi}{r} - r m \rightarrow q m \leq r k \pi + \frac{\pi}{r}$$

$$m \leq \frac{k r}{r} + \frac{\pi}{r}$$

تعداد جواب ها؟

$$\epsilon m \leq r k \pi - \frac{\pi}{r} + r m \rightarrow m \leq r k \pi - \frac{\pi}{r}$$

$$m \leq k r - \frac{\pi}{r}$$

$$\frac{r \sin x_n \cos x_n + \sin x_n}{\sin x_n} = \sin x_n + \cos x_n$$

سوال ۷

$$\frac{\sin x_n (\cos x_n + 1)}{\sin x_n} = 1 \xrightarrow{\sin x_n \neq 0} \cos x_n + 1 = 1 \rightarrow \cos x_n = 0$$

$$x_n = k\pi + \frac{\pi}{2} \rightarrow \boxed{x = k\pi + \frac{\pi}{2}}$$

$$\tan \frac{\pi}{4} = 1 \rightarrow \frac{1 - \tan x_n}{1 + \tan x_n} = \tan \left(\frac{\pi}{4} - x_n \right)$$

سوال ۸

$$\tan \left(\frac{\pi}{4} - x_n \right) = \tan x_n \rightarrow \frac{\pi}{4} - x_n = k\pi + x_n$$

$$-x_n = k\pi - \frac{\pi}{4} \xrightarrow{-k\pi = k\pi} x_n = k\pi + \frac{\pi}{4}$$

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

$$\sqrt{1 + \sin x_n} = \sqrt{2 \cos x_n} \xrightarrow{\text{توان ۲}} 1 + \sin x_n = 2 \cos x_n$$

سوال ۹

$$1 + \sin x_n = 2 - 2 \sin x_n \rightarrow 2 \sin x_n + \sin x_n - 1 = 0 \rightarrow \sin x_n = -1$$

$$\sin x_n = -1 \rightarrow x_n = k\pi - \frac{\pi}{2} \xrightarrow[\substack{0 \leq x_n \leq \pi \\ k \in \mathbb{Z}}]{\text{}} x = \frac{3\pi}{2}$$

$$\hookrightarrow \sin x_n = \frac{1}{2}$$

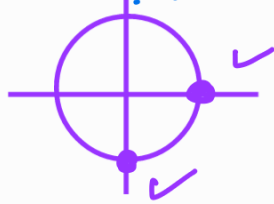
$$\sin x_n = \frac{1}{2} \rightarrow x_n = k\pi + \frac{\pi}{6} \cup k\pi + \frac{5\pi}{6} \xrightarrow[\substack{0 \leq x_n \leq \pi \\ k \in \mathbb{Z}}]{\text{}} x = \frac{\pi}{6} \cup \frac{5\pi}{6}$$

چون عبارت به توان ۲ رسیده است جواب زائد تولید می‌کنند
به ازای $\cos x_n = \frac{5\pi}{12}$ منتهی می‌شود پس جواب را باید است محذورات

* معادله ۲ جواب دارد

در سوالات به قدر $\pm \sin^n x \pm \cos^n x$ برابر ۱ یا -۱. فقط نامی است نقاط اصغر!

$$\sin^4 x - \cos^4 x = 1$$



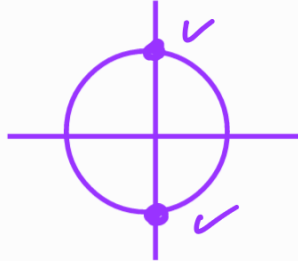
جواب ۱

$$x = 2\pi \text{ یا } 0$$

$$x = \frac{3\pi}{2}$$

الف ۱

$$\sin^4 x - \cos^4 x = 1$$



$$x = \frac{\pi}{2}$$

$$x = \frac{3\pi}{2}$$