

Date:

9, 5 پانچ نامہ! بابت مطالعہ کن! Sub:

دراہم رفتہ A

1, 29

تالیف سہ ماہ ۱۲

عائیدہ نوصال

$$\text{ان) } \cos^2 u = 3 \sin u - 1 \Rightarrow \frac{\cos^2 u - \sin^2 u}{1 - \sin^2 u} = 3 \sin u - 1 \Rightarrow 2 \sin^2 u + 3 \sin u - 2 = 0 \quad (1)$$

$$\Rightarrow 2t^2 + 3t - 2 = 0 \Rightarrow t = \frac{-3 \pm \sqrt{9 + 4(2)(-2)}}{4} \Rightarrow t = \frac{1}{2}, t = -2$$

✓

$$\Rightarrow \sin u = \frac{1}{2} \Rightarrow u = \left\{ 2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6} \right\}$$

$$\text{ب) } \cos^2 u + \cos u - 2 = 0 \Rightarrow \frac{\cos^2 u - \sin^2 u}{1 - \cos^2 u} + \cos u - 2 = 0 \Rightarrow$$

$$2 \cos^2 u + \cos u - 2 = 0 \Rightarrow 2t^2 + t - 2 = 0 \Rightarrow t = \frac{-1 \pm \sqrt{1 + 4(2)(-2)}}{4}$$

$$\Rightarrow t = 1, t = -\frac{2}{3}$$

✓

$$\Rightarrow \cos u = 1 \Rightarrow u = \{2k\pi\}$$

$$\text{الف) } \sin^2 u - \cos^2 u = \sin^2 u \Rightarrow \sin^2 u - \cos^2 u = 3 \sin^2 u \cos^2 u$$

(2)

$$\Rightarrow -(\cos^2 u - \sin^2 u) = 3 \sin^2 u \cos^2 u \Rightarrow \sin^2 u = -\frac{1}{3} \Rightarrow u = \left\{ 2k\pi - \frac{\pi}{6}, 2k\pi - \frac{5\pi}{6} \right\}$$

$$\Rightarrow u = \left\{ 2k\pi - \frac{\pi}{6}, 2k\pi - \frac{5\pi}{6} \right\}$$

Elipon

$$ب) P \cos^2 n + P \sin n \cos n = 1 \Rightarrow P \cos^2 n + \underbrace{(\cos^2 n + \sin^2 n)}_1 - 1 = 1$$

$$\Rightarrow P \cos^2 n = 1 \Rightarrow \cos^2 n = \frac{1}{P} \Rightarrow \cos n = \pm \frac{\sqrt{P}}{P} \Rightarrow n = \{k\pi \pm \frac{\pi}{P}\}$$

$$الف) \cot n (P \cos n + 1) = \frac{1}{\sin n} \Rightarrow \frac{\cos n}{\sin n} (P \cos n + 1) = \frac{1}{\sin n} \quad (1)$$

$$\Rightarrow \frac{P \cos^2 n}{\sin n} + \frac{\cos n}{\sin n} = \frac{1}{\sin n} \Rightarrow \frac{P \cos^2 n + \cos n}{\sin n} = 1 \Rightarrow P \cos^2 n + \cos n = 1 \Rightarrow$$

$$P \cos^2 n + \cos n - 1 = 0 \Rightarrow \cos n = t \Rightarrow t = \frac{-1 \pm \sqrt{1 - P(P+1)}}{P} \Rightarrow t = -1 \text{ و } t = \frac{1}{P}$$

اگر $\cos n = 0$ باشد $\sin n = 1$ است و عبارت تعریف نشده می شود

$$\Rightarrow \textcircled{1} \cos n = -1 \Rightarrow n = \{2k\pi + \pi\}$$

پس جواب غیر قابل قبول مقبول می شود

$$\textcircled{2} \cos n = \frac{1}{P} \Rightarrow n = \{2k\pi \pm \frac{\pi}{P}\}$$

$$ب) P \sin^2 n - \sin n \cos n + \cos^2 n = P \Rightarrow \sin^2 n + \sin^2 n + \cos^2 n - \sin n \cos n = P$$

$$\Rightarrow \sin^2 n - \sin n \cos n = 1 \Rightarrow \frac{1 - \cos^2 n}{P} - \frac{\sin^2 n}{P} = 1 \Rightarrow -\cos^2 n - \sin^2 n = 1$$

$$\Rightarrow \cos^2 n + \sin^2 n = -1 \Rightarrow \underbrace{\cos^2 n + \sin^2 n}_1 + P \sin n \cos n = 1 \Rightarrow$$

هر دو طرف را به توان 2 می بریم

$$P \sin^2 n \cos^2 n = 0 \Rightarrow \sin^2 n = 0 \Rightarrow n = \{k\pi\} \Rightarrow n \in \left\{ \frac{k\pi}{P} \right\}$$

$$P(1 - \cos^2 n) - \sin n \cos n + \cos^2 n = P$$

$$- \cos^2 n - \sin n \cos n = 0 \rightarrow \cos n (\cos n + \sin n) = 0 \rightarrow \cos n = 0$$

$$\rightarrow \sin n = -1$$

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

$$n = k\pi - \frac{\pi}{2}$$

Date:

Sub:

$$\text{الف) } \cos\left(\frac{\pi}{r} + n\right) \cos\left(n - \frac{\pi}{r}\right) = \frac{1}{r} \Rightarrow \frac{1}{r} \left(\cos\left(\frac{\pi}{r} + n + n - \frac{\pi}{r}\right) + \right) \quad 14$$

$$\cos\left(\frac{\pi}{r} + n - n + \frac{\pi}{r}\right) = \frac{1}{r} \Rightarrow \frac{1}{r} (\cos 2n + \dots) = \frac{1}{r}$$

$$\Rightarrow \cos 2n = \frac{1}{r} \Rightarrow 2n = 2K\pi \pm \frac{\pi}{r} \rightarrow n = K\pi \pm \frac{\pi}{2r}$$

$$\text{ب) } \cos\left(2n - \frac{\pi}{q}\right) = -\sin(2n) \Rightarrow \cos\left(2n - \frac{\pi}{q}\right) = \cos\left(\frac{\pi}{q} + 2n\right)$$

$$\Rightarrow 2n - \frac{\pi}{q} = \frac{\pi}{q} + 2n + 2K\pi \Rightarrow 2n - \frac{\pi}{q} = -\left(\frac{\pi}{q} + 2n\right) + 2K\pi, K \in \mathbb{Z}$$

$$\Rightarrow 2n - \frac{\pi}{q} = -2n - \frac{\pi}{q} + 2K\pi \Rightarrow 2n = -\frac{\pi}{q} + 2K\pi$$

$$\frac{r \sin 2n \cos 2n + \sin 2n}{\sin 2n} = \sin 2n \cdot \frac{1}{\cos 2n}$$

النموذج

$$\frac{\sin 2n (r \cdot \sin 2n + 1)}{\sin 2n} = 1 \xrightarrow{\sin 2n \neq 0} r \cdot \sin 2n + 1 = 1 \rightarrow r \cdot \sin 2n = 0$$

$$2n = K\pi + \frac{\pi}{r} \rightarrow n = K\pi + \frac{\pi}{2r}$$

سوال 4

$$\frac{\sin \frac{\pi}{r}}{1 + \cos \frac{\pi}{r}} = \tan \frac{\pi}{r}$$

$$\frac{1}{\sin \frac{\pi}{r}} + \cot \frac{\pi}{r} = \frac{1 + \cos \frac{\pi}{r}}{\sin \frac{\pi}{r}} = \frac{1}{\tan \frac{\pi}{r}} = \cot \frac{\pi}{r}$$

$$\tan \frac{\pi}{r} = \cot \frac{\pi}{r} \rightarrow \tan \frac{\pi}{r} = \tan \left(\frac{\pi}{r} - \frac{\pi}{r} \right)$$

$$\frac{\pi}{r} = k\pi + \frac{\pi}{r} - \frac{\pi}{r} \rightarrow \frac{\pi}{r} = k\pi + \frac{\pi}{r} \rightarrow \pi = r(k\pi + \frac{\pi}{r})$$

$$\text{جواب } \rightarrow k=0 \rightarrow \pi = \pi$$

$$\rightarrow k=-1 \rightarrow \pi = -\pi \rightarrow \text{افتاد} = | \pi - (-\pi) | = 2\pi$$

سوال 5

$$\cos^2 u - \sin^2 u \cos^2 u = 1 \xrightarrow{\cos^2 u = 1 - \sin^2 u}$$

$$1 - \sin^2 u - \sin^2 u \cos^2 u = 1 \rightarrow \sin^2 u (1 + \cos^2 u) = 0 \rightarrow \sin u = 0$$

$$\sin u = 0 \rightarrow u = k\pi \rightarrow u = 0, \pi, 2\pi$$

$$\rightarrow \cos^2 u = 1$$

$$\cos^2 u = -1 \rightarrow u = r(k\pi + \pi) \rightarrow u = \frac{r(k\pi + \pi)}{r} \rightarrow u = \frac{\pi}{r} / \pi, \frac{2\pi}{r}$$

مسئله 5 جواب دارد

سوال 6

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

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

$$-u = k\pi - \frac{\pi}{r} \xrightarrow{-k\pi = k\pi} u = k\pi + \frac{\pi}{r}$$

$$u = \frac{k\pi}{r} + \frac{\pi}{r}$$

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

سوال ۹

$$1 + \sin 2x = 2 - 2 \sin^2 x \rightarrow 2 \sin^2 x + \sin 2x - 1 = 0 \rightarrow \sin 2x = -1$$

$$\hookrightarrow \sin 2x = -\frac{1}{2}$$

$$\sin 2x = -1 \rightarrow 2x = 2k\pi - \frac{\pi}{2} \xrightarrow[0 \leq x < 2\pi]{\cdot \frac{1}{2}} x = \frac{3\pi}{4}$$

$$\sin 2x = \frac{1}{2} \rightarrow 2x = 2k\pi + \frac{\pi}{6} \text{ یا } 2k\pi + \frac{5\pi}{6} \xrightarrow[0 \leq x < 2\pi]{\cdot \frac{1}{2}} x = \frac{\pi}{12} \text{ یا } \frac{5\pi}{12}$$

چون عبارت به توان ۲ رسیده است جواب زائد تولید می‌کنند
به ازای $\sin 2x = \frac{5\pi}{12}$ منفرجه است پس جواب را بیاد است محذورات

* معادله ۲ جواب دارد

سوال ۱۰

در سوالات به فرم $\pm \sin^n x \pm \cos^n x$ برابر ۱ یا -۱. فقط کافی است نقاطی را

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

چک کنی!

$$x = 2\pi \text{ یا } 0$$

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



الف

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

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

$$x = \frac{5\pi}{2}$$

