

نام و نام خانوادگی: کلاس: ۱۲ باسختی تشریحی تکلیف شماره ۱۲

۱- $1 - \sin^2 x = 1 - \sin^2 x - 1 \Rightarrow \sin^2 x + \sin^2 x - 2 = 0 \Rightarrow \sin^2 x + \sin^2 x - 2 = 0 \Rightarrow (\sin x + 1)(\sin x - 1)$
 $\sin x = -1 \Rightarrow \sin x = -1 \Rightarrow 0 \cdot 0 \cdot 2$
 $\sin x = 1 \Rightarrow \sin x = 1 \Rightarrow 0 \cdot 0$



$2k\pi + \frac{3\pi}{2}$
 $2k\pi + \frac{\pi}{2}$

$1 - \cos^2 x = 1 - \cos^2 x - 1 \Rightarrow \cos^2 x + \cos^2 x - 2 = 0 \Rightarrow (\cos x + 1)(\cos x - 1)$
 $\cos x = -1 \Rightarrow \cos x = -1 \Rightarrow 0 \cdot 0 \cdot 2$
 $\cos x = 1 \Rightarrow \cos x = 1 \Rightarrow 0 \cdot 0$



$(2k\pi + \pi)$
 $(2k\pi)$

$(\sin^2 x + \cos^2 x)(\sin^2 x - \cos^2 x) = \sin^2 x - \cos^2 x \Rightarrow \sin^2 x - \cos^2 x = \sin^2 x - \cos^2 x$
 $\sin(\frac{\pi}{2} + 2n) \Rightarrow \sin 2n$
 $2n = 2k\pi + \frac{\pi}{2} + 2n \Rightarrow 2n = 2k\pi + \frac{\pi}{2}$
 $2n = 2k\pi + \pi - \frac{\pi}{2} + 2n \Rightarrow 2n = 2k\pi + \frac{3\pi}{2} + 2n$
 $2n = 2k\pi - \frac{\pi}{2} + 2n \Rightarrow (2k\pi - \frac{\pi}{2})$



$2k\pi + \frac{\pi}{2}$
 $2k\pi + \frac{3\pi}{2}$

$\frac{1 - \cos^2 x}{\sin x} + \frac{\cos^2 x}{\sin x} = \frac{1}{\sin x}$
 $\cos^2 x + \cos^2 x = 1 \Rightarrow \cos^2 x + \cos^2 x = 1 \Rightarrow (\cos^2 x + 1)(\cos^2 x - 1)$
 $\cos x = -1 \Rightarrow \cos x = -1 \Rightarrow 0 \cdot 0 \cdot 2$
 $\cos x = 1 \Rightarrow \cos x = 1 \Rightarrow 0 \cdot 0$



$2k\pi + \pi$
 $2k\pi$

$\cos(\frac{\pi}{2} + n) \cos(\frac{\pi}{2} - n) = \frac{1}{2} \Rightarrow \sin(\frac{\pi}{2} - n) \cos(\frac{\pi}{2} - n) = \frac{1}{2}$
 $\sin(\frac{\pi}{2} - 2n) = \frac{1}{2} \Rightarrow \sin(\frac{\pi}{2} - 2n) = \frac{1}{2}$
 $2n = 2k\pi + \frac{\pi}{6} \Rightarrow 2n = 2k\pi + \frac{\pi}{6}$



$2k\pi + \frac{\pi}{6}$
 $2k\pi + \frac{5\pi}{6}$

$\cos(2n + \frac{\pi}{2}) = \cos(2n - \frac{\pi}{2}) \Rightarrow 2n + \frac{\pi}{2} = 2k\pi + \frac{\pi}{2}$
 $\cos(2n - \frac{\pi}{2}) = 2n - \frac{\pi}{2} = 2k\pi - \frac{\pi}{2} \Rightarrow 2n = 2k\pi$



$2k\pi$

$\sin 2n = 1 \Rightarrow \sin 2n \cos 2n + \sin 2n = 1 \Rightarrow \sin 2n (\cos 2n + 1) = 1$
 $\sin 2n \neq 0 \Rightarrow 2n \neq \frac{k\pi}{2}$
 $2n = 2k\pi + \frac{\pi}{2} \Rightarrow 2n = 2k\pi + \frac{\pi}{2}$



$2k\pi + \frac{\pi}{2}$
 $2k\pi + \frac{3\pi}{2}$

$$\tan \frac{\pi}{2} \Rightarrow \frac{1}{\tan \frac{\pi}{2}} \Rightarrow \tan \frac{\pi}{2} = 1 \Rightarrow \tan \frac{\pi}{2} = (k\pi + \frac{\pi}{2})$$

$$\tan \frac{\pi}{2} = -1 \Rightarrow (k\pi - \frac{\pi}{2})$$

$$\sin \frac{\pi}{2} = 0 \neq k\pi$$

$$\cos \frac{\pi}{2} = 0 \neq k\pi$$

$$\cos \frac{\pi}{2} \neq 1$$

$$\tan \frac{\pi}{2} \neq 0$$

$$n \Rightarrow k\pi + \pi$$

$$n \Rightarrow k\pi - \pi$$

$$\left. \begin{array}{l} \cos \frac{\pi}{2} = 0 \\ \sin \frac{\pi}{2} = 1 \end{array} \right\} \rightarrow \text{0, 1, 2}$$

1, 2, 5

مقادیر جواب ندارد

$$\cos^2 - \sin^2 \cos(\psi u) = 1$$

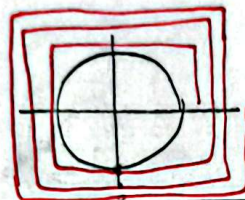
$$k \sin^2 - \sin^2 \cos(\psi u) = y \Rightarrow \sin^2 (1 + \cos(\psi u)) = 0$$

$$\sin \pi = 0 \rightarrow \text{0}$$

$$\cos(\psi u) = -1 \Rightarrow$$

$$u \rightarrow [0, 2\pi]$$

$$u \rightarrow [0, 4\pi]$$



$$y + y = \text{مجموع} = \text{جواب}$$

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$$\tan(a-b) = \frac{\tan a \tan b}{1 + \tan a \tan b}$$

$$\tan a \Rightarrow 1 \Rightarrow \frac{\pi}{2}, \frac{3\pi}{2}$$

$$\textcircled{1} \tan(\frac{\pi}{2} - u) = \tan u \Rightarrow k\pi + u = \frac{\pi}{2} - u \Rightarrow k\pi - \frac{\pi}{2} = -2u \Rightarrow \frac{k\pi}{2} + \frac{\pi}{4} = u$$

بسیار ساده است

$$\textcircled{2} \tan(\frac{\pi}{2} - u) = \tan u \Rightarrow k\pi + 2u = \frac{\pi}{2} - u \Rightarrow k\pi - \frac{\pi}{2} = -3u \Rightarrow \frac{k\pi}{3} + \frac{\pi}{6} = u$$

$$1 + \sin^2 u \Rightarrow (\sin + \cos)^2 \Rightarrow 2(\cos - \sin)^2 (\cos + \sin)^2$$

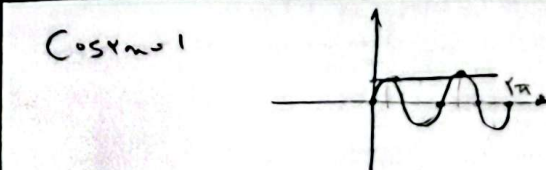
$$(\sin + \cos)^2 (1 - 2(\cos - \sin)^2) = 0$$

$$\textcircled{1} \sin = -\cos \Rightarrow \text{اجواب}$$

$$1 + 2 = \text{مجموع}$$

$$\textcircled{2} (\cos - \sin)^2 \Rightarrow \frac{1}{2} \Rightarrow \cos^2 + \sin^2 - \sin 2u = \frac{1}{2} \Rightarrow \sin 2u = \frac{1}{2}$$

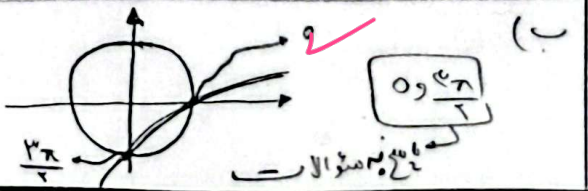
$$2u \in [0, 2\pi] \Rightarrow \text{نقطه‌ها را برپایان هم است. پس نیازی نیست که تقسیم بر 2 کنیم.}$$



$$\cos 2u = 1 \Rightarrow \frac{2\pi}{2}, \frac{\pi}{2}$$

$$2k\pi + \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2}$$

$$\sin^2 u - \cos^2 u = -1 \Rightarrow y = \sqrt{x^2 - 1}$$



سوال ۴

$$\frac{\sin \frac{\pi}{4}}{1 + \cos \frac{\pi}{4}} = \tan \frac{\pi}{8}$$

$$\frac{1}{\sin \frac{\pi}{4}} + \cot \frac{\pi}{4} = \frac{1 + \cos \frac{\pi}{4}}{\sin \frac{\pi}{4}} = \frac{1}{\tan \frac{\pi}{8}} = \cot \frac{\pi}{8}$$

$$\tan \frac{\pi}{8} = \cot \frac{\pi}{8} \rightarrow \tan \frac{\pi}{8} = \tan \left(\frac{\pi}{4} - \frac{\pi}{8} \right)$$

$$\frac{\pi}{8} = k\pi + \frac{\pi}{4} - \frac{\pi}{8} \rightarrow \frac{\pi}{4} = k\pi + \frac{\pi}{4} \rightarrow x = 2k\pi + \pi$$

$$\text{جوابها} \rightarrow k=0 \rightarrow x=\pi$$

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

سوال ۹

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

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

$$\sin x = -1 \rightarrow x = 2k\pi - \frac{\pi}{2} \quad \begin{matrix} 0 \leq x \leq \pi \\ k=1 \end{matrix} \rightarrow x = \frac{3\pi}{2}$$

$$\rightarrow \sin x = \frac{1}{2}$$

$$\sin x = \frac{1}{2} \rightarrow x = k\pi + \frac{\pi}{6} \text{ یا } 2k\pi + \frac{5\pi}{6} \quad \begin{matrix} 0 \leq x \leq \pi \\ k=0 \end{matrix} \rightarrow x = \frac{\pi}{6} \text{ یا } \frac{5\pi}{6}$$

چون عبارت به توان ۲ رسیده است جواب زائد تولید می‌کنند
به ازای $\sin x = \frac{5\pi}{12}$ منفر مرشود چون جواب را بیاید است خود ذات

۲ معادله ۲ جواب دارد