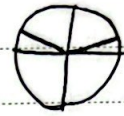


نام فردا: نیایش زیدی تکلیف شماره ۱۶ دوازدهم رشت A

$$\text{الف) } \cos 2x = 3 \sin x - 1 \quad \cos 2x = \cos^2 x - \sin^2 x = 1 - \sin^2 x - \sin^2 x = 1 - 2 \sin^2 x \quad (1)$$

$$1 - 2 \sin^2 x = 3 \sin x - 1 \quad 2 \sin^2 x + 3 \sin x - 2 = 0 \quad -b \pm \sqrt{b^2 - 4ac} = -3 \pm \sqrt{9 - 4(-2)}$$

$$= \frac{-3 \pm 5}{2} \quad \begin{cases} \sin x = -2 \text{ غلط} \\ \sin x = \frac{1}{2} \checkmark \end{cases} \quad \text{اولی}$$



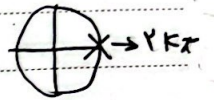
$$\sin x = \frac{1}{2}$$

$$2k\pi + \frac{\pi}{6} \text{ و } 2k\pi + \pi - \frac{\pi}{6}$$

$$x = 2k\pi + \frac{\pi}{6} \text{ و } 2k\pi + \frac{5\pi}{6}$$

$$\text{ب) } \cos 2x + \cos x - 2 = 0 \quad \cos^2 x - \sin^2 x + \cos x - 2 = 0 \quad 2 \cos^2 x - 1 + \cos x - 2 = 0$$

$$2 \cos^2 x + \cos x - 3 = 0 \quad \text{جمع فرایب منفرجه} \quad \begin{cases} \cos x = 1 \checkmark \\ \cos x = \frac{3}{2} = -\frac{3}{2} \text{ غلط} \end{cases} \quad -1 \leq \cos x \leq 1$$



$$x = 2k\pi$$

$$\text{الف) } (\sin^2 x - \cos^2 x)(\sin^2 x + \cos^2 x) = 2 \sin^2 x \cos^2 x \rightarrow \sin^2 x - \cos^2 x = 2 \sin^2 x \cos^2 x \quad (2)$$

$$\sin^2 x - \cos^2 x = 2 \sin^2 x \cos^2 x \quad -1 = 2 \times \sin^2 x \cos^2 x \quad \sin^2 x = -\frac{1}{2}$$



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

$$\text{ب) } 2(\cos^2 x - 1) = -2 \sin x \cos x \rightarrow \cos 2x = -\sin 2x \rightarrow \cos 2x = \sin(-2x)$$

$$\cos 2x = \cos\left(\frac{\pi}{2} - 2x\right) \quad 2x \rightarrow \begin{cases} 2k\pi + \left(\frac{\pi}{2} - 2x\right) = \frac{(2k+1)\pi}{2} - 2x \\ 2k\pi - \left(\frac{\pi}{2} - 2x\right) = \frac{(2k-1)\pi}{2} + 2x \end{cases}$$

$$\rightarrow 2x = \frac{(2k+1)\pi}{2} - 2x \quad 4x = \frac{(2k+1)\pi}{2} \quad x = \frac{(2k+1)\pi}{4}$$

$$\rightarrow 2x = \frac{(2k-1)\pi}{2} + 2x \quad \text{غلط}$$

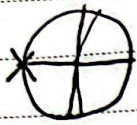


الف)  $\frac{\cos x (\sqrt{\cos x + 1})}{\sin x} = \frac{1}{\sin x}$

$\sqrt{\cos^2 x + \cos x} - 1 = 0$

$\cos x = -1$  ✓

$\cos x = -\frac{c}{a} = \frac{1}{\sqrt{2}}$  ✓



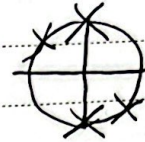
$\cos x = -1 \rightarrow x = 2k\pi + \pi$

$\cos x = \frac{1}{\sqrt{2}} \rightarrow x = 2k\pi + \frac{\pi}{4}$

$\sqrt{1 + \sqrt{\cos^2 x}}$

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

$\cot^2 x + \cot x = 0 \quad \cot x (\cot x + 1) = 0 \rightarrow \cot x = 0$   
 $\cot x = -1$



$\cot x = 0 \rightarrow x = 2k\pi + \frac{\pi}{2}$

$\cot x = -1 \rightarrow x = k\pi - \frac{\pi}{4}$

الف)  $\cos\left(\frac{\pi}{f} + x\right) \times \cos\left(x - \frac{\pi}{f}\right) = \frac{1}{f}$

$\cos\left(x + \frac{\pi}{f} - \frac{\pi}{f}\right) = \sin\left(x + \frac{\pi}{f}\right)$

$\sqrt{x} = \pm \frac{\pi}{f} + 2k\pi \rightarrow x = \pm \frac{\pi}{f} + 2k\pi$

ب)  $\cos\left(\sqrt{x} - \frac{\pi}{9}\right) = -\sin \sqrt{x} \rightarrow \cos\left(\sqrt{x} - \frac{\pi}{9}\right) = \cos\left(\sqrt{x} + \frac{\pi}{9}\right)$

①  $\sqrt{x} - \frac{\pi}{9} = \sqrt{x} + \frac{\pi}{9} + 2k\pi \rightarrow$  لا يوجد حل

②  $\sqrt{x} - \frac{\pi}{9} = -\sqrt{x} - \frac{\pi}{9} + 2k\pi \rightarrow \sqrt{x} = k\pi - \frac{\pi}{9} + \frac{\pi}{9}$

$\sqrt{x} = k\pi - \frac{\sqrt{x}}{1}$

$x = \frac{k^2 \pi^2}{1} - \frac{\sqrt{x}}{1}$



$$\frac{\sin^p x + \sin^p x}{\sin^p x} = \cos^p x + \sin^p x = 1 \quad \sin^p x = \sin^p x + \sin^p x \quad (4)$$

$$\rightarrow \sin^p x = 0 \quad \text{Unit Circle Diagram} \quad px = K\pi \rightarrow x = \frac{K\pi}{p}$$

$$\boxed{\{x \mid x = \frac{K\pi}{p}, K \in \mathbb{Z}\}}$$

$$\frac{\sin \frac{x}{p}}{1 + \cos \frac{x}{p}} \times \frac{1 - \cos \frac{x}{p}}{1 - \cos \frac{x}{p}} = \frac{\sin \frac{x}{p} (1 - \cos \frac{x}{p})}{1 - \cos^p \frac{x}{p}} = \frac{\sin \frac{x}{p} (1 - \cos \frac{x}{p})}{\sin^p \frac{x}{p}} \quad (5)$$

$$\frac{1 - \cos \frac{x}{p}}{\sin \frac{x}{p}} = \frac{1 + \cos \frac{x}{p}}{\sin \frac{x}{p}} \rightarrow 1 - \cos \frac{x}{p} = 1 + \cos \frac{x}{p} \quad p \cos \frac{x}{p} = 0$$

$$\cos \frac{x}{p} = 0 \quad \text{Unit Circle Diagram} \quad \frac{x}{p} = 2K\pi \pm \frac{\pi}{p} \quad x = K\pi \pm \frac{\pi}{p} \quad \left[-\pi, \frac{p\pi}{p}\right]$$

$$b \rightarrow -\frac{p\pi}{p}, -\frac{\pi}{p}, \frac{\pi}{p}, \frac{p\pi}{p}, \frac{q\pi}{p} \rightarrow \frac{\pi}{p} \quad \text{قريباً نفس الشيء}$$

$$\cos^p x - \sin^p x \cos^p x = \cos^p x + \sin^p x \quad \sin^p x = -\sin^p x \cos^p x \quad (6)$$

$$\cos^p x = -1 \quad \text{Unit Circle Diagram} \quad px = 2K\pi + \pi \quad x = \frac{2K}{p}\pi + \frac{\pi}{p} \quad [0, 2\pi]$$

$$\rightarrow \frac{\pi}{p}, \pi, \frac{q\pi}{p} \rightarrow \dots$$



Subject:

Year. Month. Date. ( )

$$\frac{1 - \tan x}{1 + \tan x} = \tan\left(\frac{\pi}{4} - x\right) \quad \tan\left(\frac{\pi}{4} - x\right) = \tan \mu x$$

(1)

$$\frac{\pi}{4} - x = \mu x + k\pi$$

$$\frac{\pi}{4} = \mu x + k\pi$$

$$x = \frac{\pi}{1+\mu} - \frac{k\pi}{\mu}$$

$$\sqrt{\sin^2 x + \cos^2 x + 2 \sin x \cos x} = \sqrt{2} \cos \mu x$$

(2)

$$|\sin x + \cos x| = \sqrt{2} \cos \mu x$$

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

$$x = \arcsin\left(\frac{1}{\sqrt{2}}\right)$$

$$\text{الف) } (\sin^2 x - \cos^2 x)(\sin^2 x + \cos^2 x) = 1$$

$$\sin^2 x - \cos^2 x = 1$$

(3)

$$\sin^2 x - \cos^2 x = 1 - 0 = 1$$

نقاط مرئی ۱، ۲، ۳، ۴

$$\sin^2 x - \cos^2 x = 0 - 1 = -1 \quad \times$$

$$\sin^2 x - \cos^2 x = 1 - 0 = 1 \quad \checkmark$$

$$\sin^2 x - \cos^2 x = 0 - 1 = -1 \quad \times$$

$$\rightarrow \mu k\pi \pm \frac{\pi}{4}$$

$$\text{اصلی جواب}$$

$$\rightarrow \frac{\pi}{4}, \frac{5\pi}{4}$$

(4)



ب)  $\sin^3 x - \cos^3 x = 1 \rightarrow$  چون  $\sin^2 x + \cos^2 x = 1$  این معادله را یک یکتا می کنیم

