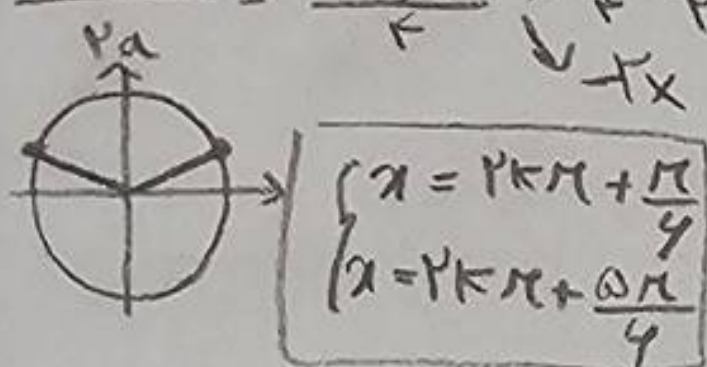


نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ۱۴ کلاس دوازدهم
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الف) $\cos^2 x = 3 \sin x - 1$

$1 - 3 \sin^2 x = 3 \sin x - 1 \Rightarrow 3 \sin^2 x + 3 \sin x - 2 = 0$

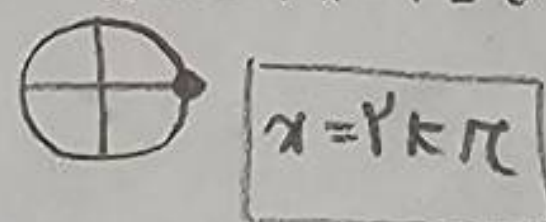
$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-3 \pm \sqrt{9 + 24}}{6} \Rightarrow \frac{x}{3} = \frac{1}{3} = \sin x$



ب) $\cos^2 x + \cos x - 2 = 0$

$\cos^2 x - 1$

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



الف) $\sin^2 x - \cos^2 x = \sin x \Rightarrow \sin(x - \frac{\pi}{4}) = \sin x$

$\frac{-\cos^2 x}{-\cos^2 x} \quad x = 2k\pi + x - \frac{\pi}{4} \Rightarrow x = k\pi - \frac{\pi}{4}$

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

$\Rightarrow x = 2k\pi + \frac{3\pi}{4} \Rightarrow x = \frac{k\pi}{2} + \frac{\pi}{4}$

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

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

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

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



ب) $2 \sin^2 x - \sin x \cos x + \cos^2 x = 1$

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

$\cos x = 0 \Rightarrow x = k\pi + \frac{\pi}{2}$
 $\sin x = -\cos x \Rightarrow x = 2k\pi + \frac{3\pi}{4}$

الف) $\cos(\frac{\pi}{4} + x) \cos(x - \frac{\pi}{4}) = \frac{1}{2} \Rightarrow \frac{1}{2} [\cos(2x) + \cos(\frac{\pi}{2})]$
 $= \frac{1}{2} \Rightarrow \cos 2x = \frac{1}{2} \Rightarrow 2x = 2k\pi \pm \frac{\pi}{3} \Rightarrow x = k\pi \pm \frac{\pi}{6}$

$x = k\pi \pm \frac{\pi}{6}$

ب) $\cos(\frac{\pi}{4} - x) = -\frac{\sin x}{\sin(\frac{\pi}{4} - x)} \Rightarrow \cos(\frac{\pi}{4} - x) = \cos(\frac{\pi}{4} + x)$
 $\Rightarrow x - \frac{\pi}{4} = 2k\pi \pm (\frac{\pi}{4} + x)$

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

$\frac{\sin^2 x + \sin x}{\sin^2 x} = \frac{\sin^2 x}{\sin^2 x} + 1 \Rightarrow \frac{\sin^2 x}{\sin^2 x} + 1 - \sin^2 x = 1 - \sin^2 x \Rightarrow \frac{\sin^2 x}{\sin^2 x} = 0$

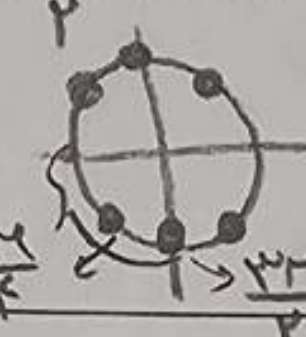
$\cos^2 x + \sin^2 x = 1 \Rightarrow \cos^2 x = 1 - \sin^2 x$

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

$$\frac{\sin \frac{x}{p}}{1 + \cos \frac{x}{p}} = \frac{1}{\sin \frac{x}{p}} + \cot \frac{x}{p} \Rightarrow \frac{\sin \frac{x}{p}}{1 + \cos \frac{x}{p}} = \frac{1 + \cos \frac{x}{p}}{\sin \frac{x}{p}} \Rightarrow \left(\sin \frac{x}{p} \right)^2 = \left(1 + \cos \frac{x}{p} \right)^2$$

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

$$\frac{x}{p} = k\pi + \frac{\pi}{2} \Rightarrow x = \frac{k\pi}{p} + \frac{\pi}{2}$$

$$\frac{x}{p} = 2k\pi + \pi \Rightarrow x = k\pi + \frac{\pi}{p}$$


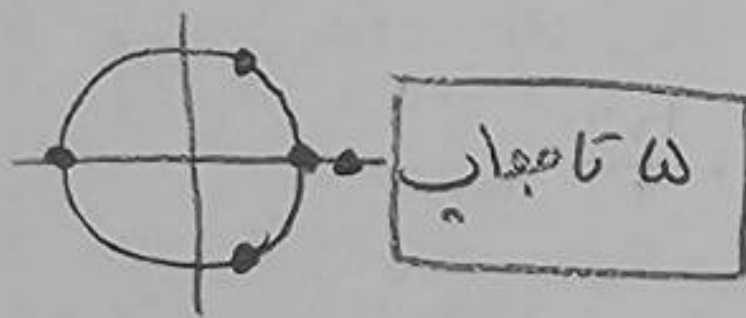
$$\frac{\frac{3\pi}{p} - \frac{\omega\pi}{p}}{p} = \frac{\pi}{p}$$

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

$$\cos^2 x (1 + \cos^2 x) = 1 + \cos^2 x$$

$$1 + \cos^2 x = 0 \Rightarrow x = k\pi + \frac{\pi}{2} \Rightarrow x = \frac{k\pi}{p} + \frac{\pi}{2}$$

$$\cos^2 x = 1 \Rightarrow x = k\pi$$



$$\frac{1 - \tan x}{1 + \tan x} = \tan \left(\frac{\pi}{4} - x \right) \Rightarrow \tan^2 x = \tan \left(\frac{\pi}{4} - x \right) \Rightarrow x = \frac{\pi}{4} - x + k\pi$$

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

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

$$\Rightarrow 1 + \sin^2 x = 2 - 2 \sin^2 x \Rightarrow 3 \sin^2 x + \sin^2 x - 1 = 0$$

$$\sin^2 x = 1 \Rightarrow x = k\pi + \frac{\pi}{2} \Rightarrow x = k\pi + \frac{\pi}{2}$$

$$\sin^2 x = \frac{1}{3} \Rightarrow x = k\pi + \frac{\pi}{6} \Rightarrow x = k\pi + \frac{\pi}{6}$$

$$x = k\pi + \frac{\pi}{6} \Rightarrow x = k\pi + \frac{\pi}{6}$$

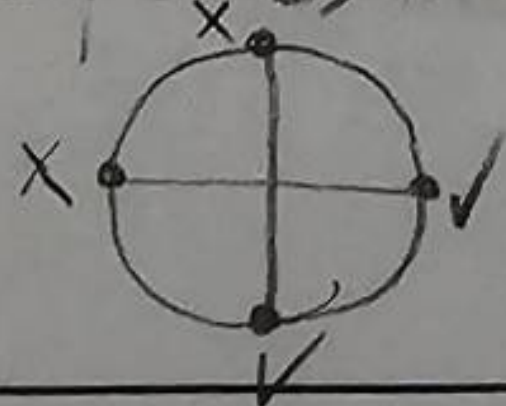
$$x = k\pi + \frac{\pi}{6} \Rightarrow x = k\pi + \frac{\pi}{6}$$

$$\omega = \frac{3\pi}{p} + \frac{\pi}{12} \rightarrow \text{دو برابر}$$

$$\sin^2 x - \cos^2 x = 1 \Rightarrow -\cos^2 x = 1 \Rightarrow \cos^2 x = -1 \Rightarrow x = k\pi + \frac{\pi}{2} \Rightarrow x = k\pi + \frac{\pi}{2}$$

$$\frac{\pi}{p} + \frac{3\pi}{p} = \frac{4\pi}{p} = \frac{2\pi}{p}$$

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



$$0, \frac{3\pi}{p}, 2\pi \Rightarrow 0 + \frac{3\pi}{p} + 2\pi = \frac{4\pi}{p}$$