

۱۷, ۲۵

فصل ۱۷ و ۲۵

۱۲ ~ شبه

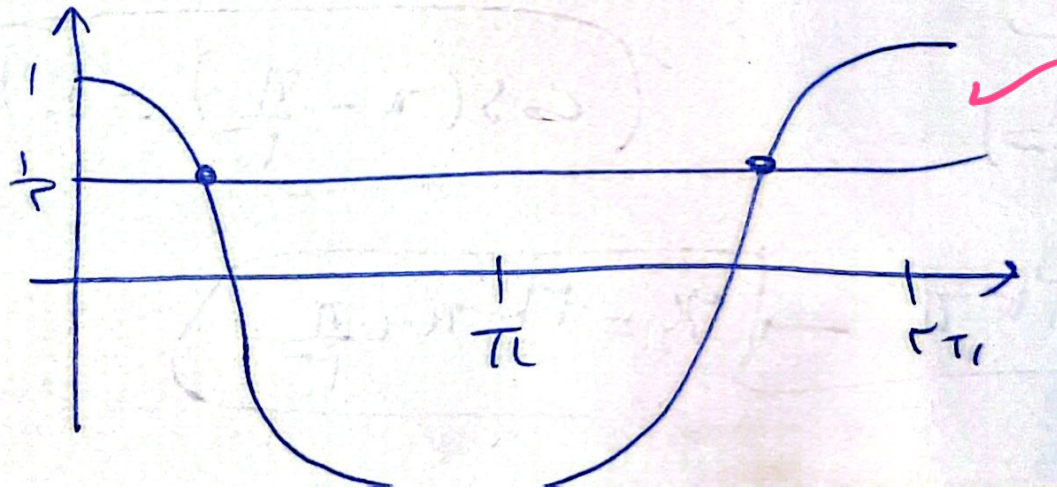
$$\sec \theta - \tan \theta = 1 \rightarrow \sec \theta = 1 + \tan \theta$$

$$1 + \tan \theta = \frac{1}{\cos \theta}$$

$$\sec \theta = \frac{1}{\cos \theta} \rightarrow \cos \theta = \frac{1}{2} \rightarrow \boxed{\cos \theta = \frac{1}{2}}$$

(جواب ۱)

$[\theta, \pi]$



۲ جواب

$$(-\pi, \pi)$$

$$1) - 65$$

$$\cos x \cos x + \sin x = 1$$

سوال

$$\sin x (\cos x + 1) = \sin x (\cos x - \sin x + 1) = \sin x (\cos x - \sin x + 1)$$

$$= \sin x (\cos x - \sin x) = 1 \implies \cos x - \sin x = 1$$

$$\sin x = 1$$

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

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

$$0, \frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \pi$$

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

(f) (b)

$$\frac{1}{\sin(\theta x + \frac{\pi}{2})} + \frac{1}{\cos(\theta x + \frac{\pi}{2})} = 0$$

(1, 10)

$$\Leftrightarrow \sin(\theta x + \frac{\pi}{2}) + \cos(\theta x + \frac{\pi}{2}) = 0$$

$$\sin(\theta x + \frac{\pi}{2}) + \cos(\theta x + \frac{\pi}{2}) = 0 \rightarrow \cos \theta x - \sin \theta x = 0$$

$$\cos \theta x - \sin \theta x \cos \theta x = 0$$

$$\cos \theta x (1 - \sin \theta x) = 0$$

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

$$\boxed{x = \frac{k\pi}{\theta} + \frac{\pi}{\theta}}$$

$$1 - \sin \theta x = 0 \rightarrow \sin \theta x = 1 \rightarrow \begin{cases} \theta x = \frac{\pi}{2} + 2k\pi \\ \theta x = \frac{5\pi}{2} + 2k\pi \end{cases} \rightarrow \begin{aligned} x &= \frac{k\pi}{\theta} + \frac{\pi}{2\theta} \\ x &= \frac{k\pi}{\theta} + \frac{5\pi}{2\theta} \end{aligned}$$

$$\alpha = \frac{4\pi}{15} - \frac{\pi}{15} = \frac{3\pi}{15} = \frac{\pi}{5}$$

$$\tan(\alpha) = \tan \frac{\pi}{5} = -\sqrt{5}$$

(4010)

$$\sin\left(x + \frac{\pi}{4}\right) \cos\left(x - \frac{\pi}{4}\right) = 1$$

$$\left(x - \frac{\pi}{4} + \frac{\pi}{4}\right)$$

$$\cos\left(x - \frac{\pi}{4}\right)$$

$$\cos\left(x - \frac{\pi}{4}\right)^r = 1$$

$$\cos\left(x - \frac{\pi}{4}\right) = (\pm 1)$$

$r \in \mathbb{Z}$
 $r \in \mathbb{Z}$

$$x - \frac{\pi}{4} = r\pi \rightarrow x = r\pi + \frac{\pi}{4}$$

$$x - \frac{\pi}{4} = r\pi + \pi \rightarrow x = r\pi + \pi + \frac{\pi}{4} \rightarrow x = (r+1)\pi + \frac{\pi}{4}$$

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

$$\frac{\pi}{4}$$

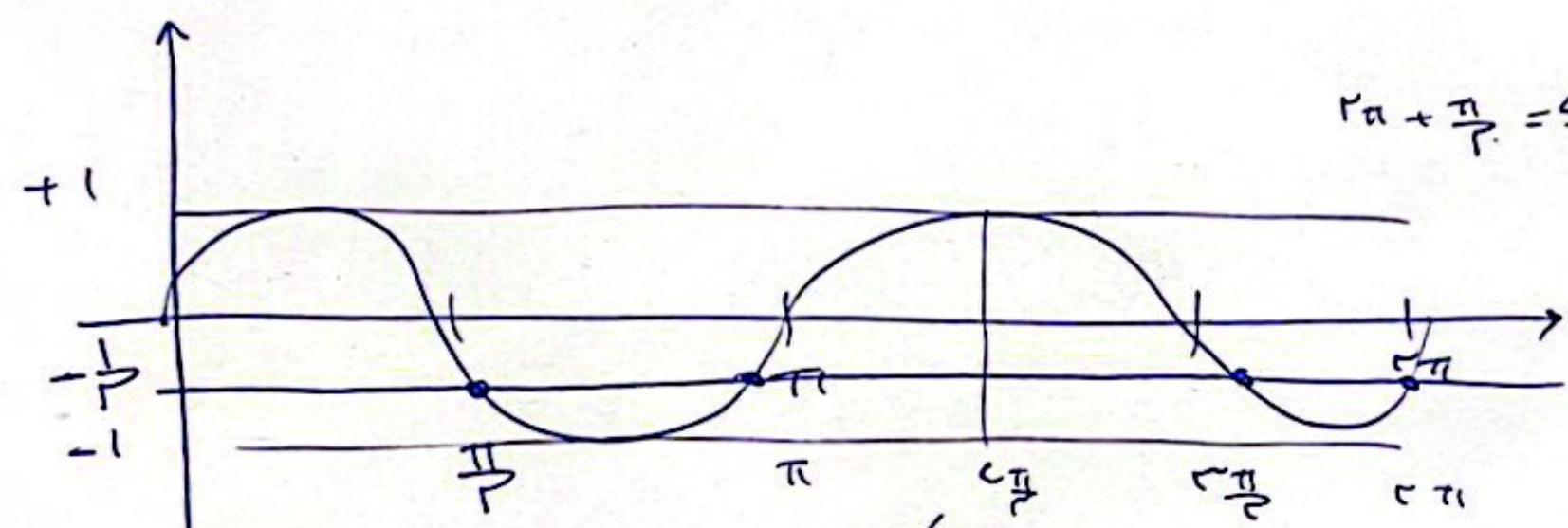
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(سوال ۸)

$$\sin x \sin\left(\frac{5\pi}{2} - x\right) = 1$$

$\underbrace{\hspace{10em}}_{-\cos x}$

$$-\sin x \cos x = 1 \rightarrow \frac{\sin x \cos x}{\frac{1}{2} \sin 2x} = -\frac{1}{\frac{1}{2}} \rightarrow \boxed{\sin 2x = -\frac{1}{2}}$$



$$2\pi + \frac{\pi}{2} = \frac{5\pi}{2} \div 2 = \frac{5\pi}{4}$$

ممكن ان يكون = 5π/4

$$x = \frac{5\pi}{4} \quad \boxed{= 5\pi/4}$$

د

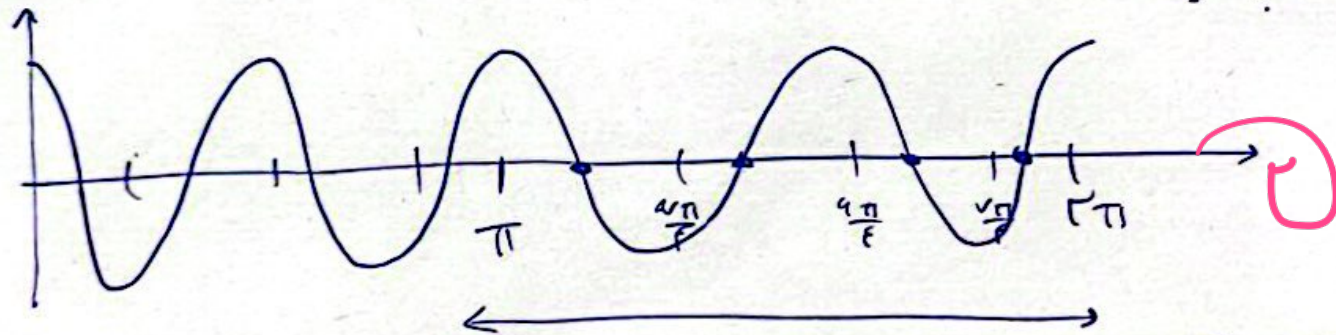
$$\frac{\sin 2x}{\cos 2x} \propto \frac{\sin x}{\cos x} = 1 \rightarrow \frac{\sin 2x \sin x}{\cos 2x \cos x} = 1$$

1. جواب

$$\sin 2x \sin x = \cos 2x \cos x \rightarrow \cos 2x \cos x - \sin 2x \sin x = 0$$

$$\cos(\alpha \pm \beta) = \cos \alpha \cos \beta \mp \sin \alpha \sin \beta$$

$$\cos(x) = 0$$



جواب

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

$$m(\cos x - \sin x) \cdot \sqrt{e} \sin(x) = \sqrt{e}$$

(وہ)

$$m(\cos x - \sin x) = \sqrt{e}$$

$$m(1 - \sqrt{e} \sin x \cos x) = \frac{e}{\sqrt{e}} = m = \sqrt{e}$$

(10)

$$\cos\left(x + \frac{\pi}{4}\right) = \frac{1}{\sqrt{e}}$$

$$\cos\left(x + \frac{\pi}{4}\right) = \cos\left(x + \frac{\pi}{4}\right) = 1$$

$$-\frac{1}{\sqrt{e}} \sin x = -\frac{1}{\sqrt{e}}$$

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

$$\frac{e}{\sqrt{e}} = \sqrt{e} = \frac{1}{\sqrt{e}}$$

$$\cos\left(n + \frac{\pi}{2}\right) = \frac{\sqrt{2}}{2} (\cos n - \sin n) = \frac{\sqrt{2}}{2} \rightarrow \cos n - \sin n = \frac{\sqrt{2}}{2} \quad \text{⑤}$$

$$\cos n - \sin n = \frac{\sqrt{2}}{\sqrt{2}} \xrightarrow{\text{لـ 4}} \frac{\sqrt{4}}{\sqrt{4}} \rightarrow \boxed{\cos n - \sin n = \frac{\sqrt{4}}{\sqrt{4}}}$$

$$(\cos n - \sin n)^2 = 1 - \sin 2n = \frac{4}{4} \rightarrow \boxed{\sin 2n = \frac{1}{2}}$$

$$m(\cos n - \sin n) - 4\sqrt{4}(\sin 2n) = \sqrt{4} \rightarrow \frac{\sqrt{4}}{\sqrt{4}} m - 4\sqrt{4}\left(\frac{1}{2}\right) = \sqrt{4}$$

$$\frac{\sqrt{4}}{\sqrt{4}} m - \sqrt{4} = \sqrt{4} \rightarrow \frac{m\sqrt{4}}{\sqrt{4}} = 2\sqrt{4} \rightarrow \boxed{m = 4}$$

$$(1 + \cos 5n)(1 + \cos 6n)(1 + \cos 17) = \frac{1}{1}$$

9.11.20

$$\cos 5n \leq \cos 6n \leq \cos 17 = \frac{1}{1}$$

α sin

$$\sin 5n \leq \sin 6n \leq \sin 17 = \frac{1}{1}$$

$$\frac{1}{2} \sin 5n \leq \sin 6n$$

$$\frac{1}{2} \sin 6n \leq \sin 17$$

$$\frac{1}{2} \sin 17 = \frac{1}{1}$$

$$\sin 17 \leq \sin(-17)$$

$$\sin 17 = \sin 17$$

$$17 = 2k\pi + \alpha$$

$$17 = 2k\pi + \pi - \alpha \quad \alpha = 2k\pi - 17$$

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

$$\alpha = 2k\pi + \pi + 17$$

$$-17 = 2k\pi + \pi$$

$$\alpha = \frac{2k\pi + \pi}{-17}$$

$$\alpha = \frac{2k\pi + \pi}{9}$$

man

$$\frac{2\pi}{9} \leq \frac{\pi}{9}$$

$$\frac{\sqrt{2}}{2} \leq \frac{\sqrt{2}}{2}$$

⑦ عبارت را $\frac{1}{r}$ ضرب می‌کنیم.

$$\frac{1}{r} \sin u + \frac{\sqrt{r}}{r} \cos u = \frac{\sqrt{r}}{r}$$

$$\cos 45^\circ \sin u + \sin 45^\circ \cos u = \frac{\sqrt{r}}{r} \rightarrow \sin\left(u + \frac{\pi}{4}\right) = \frac{\sqrt{r}}{r}$$

$$\left\{ u + \frac{\pi}{4} = 2k\pi + \frac{\pi}{2} \rightarrow u = 2k\pi - \frac{\pi}{4} \xrightarrow{-\pi \leq u \leq \pi} k=0, 1 \rightarrow u = -\frac{\pi}{4}, \frac{7\pi}{4} \right.$$

$$\left\{ u + \frac{\pi}{4} = 2k\pi + \frac{3\pi}{2} \rightarrow u = 2k\pi + \frac{5\pi}{4} \xrightarrow{-\pi \leq u \leq \pi} k=0 \rightarrow u = \frac{5\pi}{4} \right.$$

$$S = \frac{7\pi}{4} - \frac{\pi}{4} + \frac{5\pi}{4} = \frac{11\pi}{4} = \boxed{\frac{9\pi}{4}}$$