

$$\begin{aligned} \sec x = 1 + \tan^2 x &\Rightarrow \sec^2 x = 1 \Rightarrow \cos x = \frac{1}{\sqrt{2}} \Rightarrow x = k\pi \pm \frac{\pi}{4} \\ &\downarrow \\ &\frac{1}{\cos^2 x} \Rightarrow x = \frac{\pi}{4}, \frac{5\pi}{4} \end{aligned}$$

جواب ۲

$$\begin{aligned} 6 \sin^2(x) + 2 \cos(2x) &= -2 \Rightarrow \frac{6 - 6 \cos^2 x}{2} + 2 \cos(2x) + 2 = 0 \\ \sin^2 x &= \frac{1 - \cos 2x}{2} \quad x \in \left(\frac{\pi}{2}, \pi \right) \quad \begin{cases} 3 \cos^2 x - 6 \cos^2 x + 4 = 0 \\ \cos^2 x = -1, \cos^2 x = 1 \end{cases} \\ x &= 2k\pi \Rightarrow x = k\pi \end{aligned}$$

$$\begin{aligned} x &= 2k\pi + \pi \Rightarrow x = \frac{2k\pi + \pi}{2} \Rightarrow \frac{(2k+1)\pi}{2} \Rightarrow \text{جواب } (-\pi), (\pi) \text{ دارد} \\ k &= \frac{2k+1}{2} \Rightarrow k=1 \end{aligned}$$

$$\begin{aligned} 2 \sin x \cdot \cos^2 x + \sin x &= 1 \Rightarrow 2 \sin x (1 - \sin^2 x) + \sin x = 1 \\ \Rightarrow 2 \sin x - 2 \sin^3 x + \sin x &= 1 \Rightarrow \sin x - \sin^3 x = 1 \end{aligned}$$

$$\frac{0\pi}{2} \leq x \leq \frac{\pi}{2}, \frac{0\pi}{2} \leq x \leq \frac{\pi}{2}, \frac{3\pi}{2} \leq x \leq \frac{2\pi}{2} \Rightarrow \begin{cases} x = 2k\pi + \frac{\pi}{2} \Rightarrow \sin^2 x = 1 \\ x = \frac{2k\pi}{2} + \frac{\pi}{2} \end{cases}$$

$$\begin{aligned} \frac{1}{\sin(\frac{\pi}{4} + x)} + \frac{-1}{\cos(\frac{\pi}{4} + x)} &= \Rightarrow \frac{2 \sin(x) - 1}{\sin(x) \cos(x)} = 0 \Rightarrow \sin(x) = \frac{1}{2} \\ x &= 2k\pi + \frac{\pi}{6} \quad \left\{ \begin{array}{l} x_1 = \frac{\pi}{6}, x_2 = \frac{5\pi}{6} \\ x = 2k\pi + \frac{0\pi}{6} \end{array} \right\} \Rightarrow \sin(x) = \frac{1}{2} \Rightarrow x = \frac{\pi}{6} \end{aligned}$$

$$\Rightarrow \tan(x) = \tan\left(\frac{\pi}{6}\right) = -\sqrt{3}$$

$$\begin{aligned} -m(\sin x - \cos x) &= -m\sqrt{2} \sin\left(x - \frac{\pi}{4}\right) = \frac{-m\sqrt{2}}{\sqrt{2}} \cos\left(x + \frac{\pi}{4}\right) \\ \Rightarrow -m\sqrt{2} - m\sqrt{2} - 2\sqrt{2} \sin(2x) &= \sqrt{2} \Rightarrow -m - 2 \sin(2x) = 1 \end{aligned}$$

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

$$\Rightarrow \sin\left(x + \frac{\pi}{4}\right) = \pm 1 \Rightarrow 2k\pi \pm \frac{\pi}{4} = x + \frac{\pi}{4}$$

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

$$\Rightarrow \sin x + \sqrt{3} \cos x = \sqrt{2} \Rightarrow \sqrt{2} \sin\left(x + \frac{\pi}{4}\right) = \sqrt{2} \Rightarrow \sin\left(x + \frac{\pi}{4}\right) = \frac{\sqrt{2}}{\sqrt{2}}$$

$$\text{أو} \quad \tan \alpha = \sqrt{3} \Rightarrow \alpha = \frac{\pi}{3} \Rightarrow x + \frac{\pi}{4} = 2k\pi + \frac{\pi}{3}$$

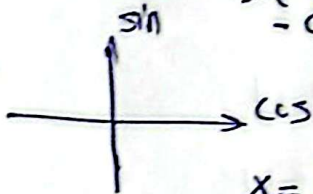
$$x = 2k\pi - \frac{\pi}{12}$$

$$x = 2k\pi + \frac{5\pi}{12}$$

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

$$\text{بذلك} \quad \frac{0\pi}{12} + \frac{5\pi}{12} - \frac{\pi}{12} = \frac{4\pi}{12} = \frac{\pi}{3}$$

$$\sin x \cdot \sin\left(\frac{\pi}{4} - x\right) = 1 \Rightarrow \sqrt{2} \sin x \cdot \cos x = \frac{1}{\sqrt{2}} \Rightarrow \sin 2x = \frac{1}{\sqrt{2}}$$



$$\left. \begin{aligned} 2x &= 2k\pi - \frac{\pi}{4} \\ 2x &= 2k\pi + \pi + \frac{\pi}{4} \end{aligned} \right\} \begin{aligned} x &= k\pi - \frac{\pi}{8} \\ x &= k\pi + \frac{5\pi}{8} \end{aligned}$$

$$x = \frac{11\pi}{12}, \frac{13\pi}{12}, \frac{5\pi}{12}, \frac{19\pi}{12} \Rightarrow \text{جواب}$$

$$\cos^2 \alpha = \frac{1 + \cos 2\alpha}{2} \Rightarrow 2 \cos^2 \alpha = 1 + \cos 2\alpha \Rightarrow \text{صورت}$$

$$\Rightarrow (2 \cos^2 \alpha) \cdot (2 \cos^2 \alpha) \cdot (2 \cos^2 \alpha) = \frac{1}{8} \Rightarrow |\cos \alpha \cdot \cos \alpha \cdot \cos \alpha| = \frac{1}{8}$$

$$\Rightarrow x_{\text{مدى}} = \frac{\pi}{4}$$

$$\tan(2x) \cdot \tan(x) = 1 \Rightarrow \tan(2x) = \frac{1}{\tan(x)} \Rightarrow \tan(2x) = \cot(x)$$

$$\tan(2x) = \tan\left(\frac{\pi}{2} - x\right)$$

$$2x = k\pi + \frac{\pi}{2} - x \Rightarrow x = \frac{k\pi}{3} + \frac{\pi}{6} \Rightarrow x = \frac{(2k+1)\pi}{6}$$

$$x = \frac{\pi}{6}, \frac{3\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6} \Rightarrow \frac{8\pi}{6} = 4\pi$$