

1

$$1 + \tan^2 x = \frac{1}{\cos^2 x} \quad \cos^2 x = 1 \quad \cos^2 x = \frac{1}{4} \quad \cos x = \pm \frac{1}{2}$$

مقدارهای متغیر

$$\cos x = \pm \frac{1}{2} \Rightarrow x = 2k\pi \pm \frac{\pi}{3}$$

جواب

$$\frac{5\pi}{6}, \frac{\pi}{6}$$

2

برای اینکه جواب ۲ شود فقط یک راه است

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

① $\cos^2 x = -1$
 $\sin x = 0 \Rightarrow x = k\pi$
 $\cos^2 x = -1 \Rightarrow x = 2k\pi + \pi$

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

جواب ۲

اسرار

جواب

$- \pi, \pi$

3

$$2\sin x (1 - 2\sin^2 x) + \sin x = 3\sin x - 4\sin^3 x = 1$$

$$\sin(3x) = 1 \quad 3x = 2k\pi + \frac{\pi}{2}$$

$$x = \frac{2k\pi}{3} + \frac{\pi}{6}$$

$\frac{\pi}{6}, \frac{5\pi}{6}, \frac{3\pi}{2}$

$\frac{5\pi}{6}$

4

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

$$\frac{1}{\cos 2x} - \frac{1}{\sin 2x} = \frac{\sin 2x - \cos 2x}{\sin 2x \cos 2x} = 0$$

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

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

$\frac{\pi}{8}, \frac{5\pi}{8}, \frac{9\pi}{8}, \frac{13\pi}{8}$

$\frac{5\pi}{8}$

$\tan \frac{\pi}{4} = -\sqrt{2}$

5

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

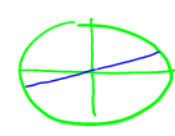
$$\cos x - \sin x = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2} \Rightarrow \sqrt{2} \left(\frac{m-5}{4}\right) = \frac{\sqrt{2}}{2} \Rightarrow \sin 2x$$

$m = 9 \sin 2x + 5$

$9\left(\frac{1}{2}\right) + 5 = 4$

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

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

Produced with a Trial Version of PDF Annotator - www.pdfannotator.com $\cos\left(x + \frac{\pi}{4}\right) = \cos\left(-x + \frac{\pi}{4}\right) / \cos\left(x - \frac{\pi}{4}\right) = \cos\left(\frac{\pi}{4} - x\right) \quad \frac{\pi}{4} - x = A$ $\cos\left(\frac{\pi}{4} - x\right) = 1 \rightarrow x = \frac{\pi}{4} - k\pi$ $\cos A = \pm 1 \rightarrow k\pi = \frac{\pi}{4} - x$ $x = \frac{\pi}{4} - k\pi$  $\frac{\pi}{4} + \frac{6\pi}{4} = \frac{7\pi}{4}$	6
$\sin\left(x + \frac{\pi}{4}\right) = \sqrt{2} \quad \sin\left(x + \frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}$ $\tan \frac{\pi}{4} = \sqrt{2}$ $x + \frac{\pi}{4} \rightarrow \begin{cases} 2k\pi + \frac{\pi}{4} \\ 2k\pi + \frac{5\pi}{4} \end{cases}$ $x = \frac{3\pi}{4}, \frac{7\pi}{4}, \frac{11\pi}{4}, \frac{15\pi}{4}$ $\rightarrow \text{ع. س. م.}: \frac{17\pi}{12} = \frac{9\pi}{6}$	7
$\sin\left(\frac{3\pi}{4} - x\right) = -\cos(x) \rightarrow \sin 2x = -\frac{1}{2}$ $\sin x \times (-\cos x) = -\sin 2x = 1$ $x \rightarrow \begin{cases} k\pi - \frac{\pi}{6} \\ k\pi + \frac{5\pi}{6} \end{cases}$  $x = \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}, \frac{13\pi}{6}$	8
برای ترها به ترتیب: $(\cos^2 x)(\cos^2 x)(\cos^2 x) = \frac{1}{8}$ $\sin^2 x \rightarrow \frac{1}{8} \sin^2 x \rightarrow \frac{1}{8} \sin^2 x \rightarrow \frac{1}{8} \sin^2 x$ $\frac{\sin^2 x}{\sin^2 x} = \frac{1}{8} \quad \sin^2 x = \sin^2 x \quad x = \frac{n\pi}{9} / x = \frac{k\pi}{9}$ $x = k\pi + \frac{\pi}{9}$ عضوهای غ ق ق حذف نشده!  max = $\frac{17\pi}{9}$	9
$\tan(2x) = \cot(x) = \tan\left(\frac{\pi}{2} - x\right)$ $2x = k\pi + \left(\frac{\pi}{2} - x\right) \rightarrow x = \frac{k\pi}{3} - \frac{\pi}{6}$  $\rightarrow \frac{5\pi}{6} = \frac{5\pi}{6}$ $\frac{9\pi}{6}, \frac{11\pi}{6}, \frac{13\pi}{6}, \frac{15\pi}{6}$	10