

۱. $\sec x - \tan^2 x = 1 \quad [0, 2\pi]$ تعداد

$\sec x - \frac{1 - \cos^2 x}{\cos^2 x} = 1$

$\xrightarrow{\times \cos^2 x} \frac{1 - \cos^2 x}{\cos^2 x} = 1 \rightarrow 1 - \cos^2 x = \cos^2 x \rightarrow 1 = 2\cos^2 x \rightarrow \cos^2 x = \frac{1}{2}$
 $\cos x = \pm \frac{1}{\sqrt{2}}$

 جواب: ۴

۲. $2\sin^2(x) + 2\cos(3x) = -2 \quad [-\pi, \pi]$ تعداد

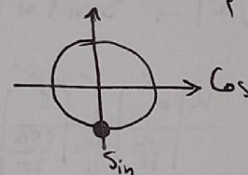
$\begin{cases} \sin^2 x = 0 \rightarrow x = k\pi \quad (1) \\ \cos 3x = -1 \rightarrow 3x = 2k\pi + \pi \rightarrow x = \frac{2k\pi}{3} + \frac{\pi}{3} \quad (2) \end{cases}$

$(1) \cap (2) \rightarrow \pi, -\pi$

جواب: ۲

۳. $\frac{2\sin(x)\cos(2x) + \sin(x)}{1 - 2\sin^2(x)} = 1 \rightarrow 2\sin(x) - 2\sin^3(x) + \sin(x) = 1 - 2\sin^2(x) \quad [0, 2\pi]$
 $\frac{3\pi}{2} = \text{مجموع}$

$3\sin x - 2\sin^3(x) - 1 = 0 \rightarrow \sin x = -1$



جواب: ۱

$\frac{1}{\sin(\frac{\pi+2x}{2})} + \frac{1}{\cos(\frac{\pi+4x}{2})} = 0 \quad [0, \pi]$

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

$\frac{2\pi}{12} - \frac{\pi}{12} = \frac{\pi}{12} = \frac{\pi}{6} = \alpha \quad \tan(\frac{\pi}{6}) = -\frac{1}{\sqrt{3}} \quad \begin{cases} \cos 2x = 0 \rightarrow 2x = \frac{\pi}{2} \rightarrow x = \frac{\pi}{4}, \frac{3\pi}{4} \\ \sin 2x = \frac{1}{2} \rightarrow 2x = \frac{\pi}{6}, \frac{5\pi}{6} \end{cases}$

$\cos(x + \frac{\pi}{2}) = \frac{1}{\sqrt{3}}$

$\frac{\sqrt{3}}{2}(\cos x - \sin x) = \frac{1}{\sqrt{3}}$

$\cos x - \sin x = \frac{2}{\sqrt{3}} \xrightarrow{\text{توان}} \cos^2 x + \sin^2 x - 2\cos x \sin x = \frac{4}{3}$
 $2\cos x \sin x = \frac{1}{3}$

$m(\cos x - \sin x) - 2\sqrt{3}\sin(2x) = \sqrt{3}$

$m(\frac{\sqrt{3}}{2}) - 2\sqrt{3} \times \frac{1}{3} = \sqrt{3} \rightarrow m = 2\sqrt{3} \times \frac{\sqrt{3}}{2} = 6$

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