نام و نام خانوادگی کوروش شیرازی فر پاسخنامه تشریحی تکلیف شماره ۱۷ کلاس دوازدهم A

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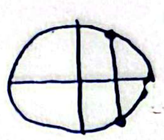
$8\cos x = 1+\tan^2 x \Rightarrow 8\cos x = \frac{1}{\cos^2 x} \longrightarrow 8\cos x - \frac{1}{\cos^2 x} = 0$

$\xrightarrow{\times\cos^2 x} 8\cos^3 x - 1 = 0 \Rightarrow (2\cos x - 1)(4\cos^2 x + 2\cos x + 1) = 0$

$\Delta < 0$ ریشه ندارد

$2\cos x - 1 = 0 \Rightarrow \cos x = \frac{1}{2} \rightarrow$  ۲ جواب

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$5\sin^2(x) + 2\cos 3x = -2 \Rightarrow 5(1-\cos^2 x) + 2(4\cos^3 x - 3\cos x) = -2$

$\Rightarrow \underbrace{8c^3 - 5c^2 - 6c + 7 = 0}_{\cos x = c} \xrightarrow[\cos x = -1]{\text{امتحان کردم}} -8 - 5 + 6 + 7 = 0$

$\Rightarrow$ عبارت: $(\cos x + 1)(8\cos^2 x - 13\cos x + 7) = 0$ $\quad \Delta < 0$

$\Rightarrow \cos x = -1 \Rightarrow x = 2k\pi + \pi \Rightarrow$ $\boxed{\text{۱ جواب}}$

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

$\Rightarrow \sin x(3 - 4\sin^2 x) = 1 \Rightarrow 4\sin^3 x - 3\sin x + 1 = 0$

$\sin x = \frac{1}{2} \Rightarrow x = \frac{\pi}{6}, \frac{5\pi}{6}$

$\sin x = -1 \Rightarrow x = \frac{3\pi}{2}$

جمع: $\frac{15\pi}{6} = \frac{5\pi}{2}$

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$\frac{1}{\sin(\frac{\pi+4x}{2})} + \frac{1}{\cos(\frac{\pi+8x}{2})} = \frac{1}{\cos 2x} - \frac{1}{\sin 4x} \Rightarrow \frac{\sin 4x + \cos 2x}{-\cos 2x\sin 4x} = 0$

$\Rightarrow \frac{-2\sin 2x\cos 2x + \cos 2x}{-\cos 2x\cdot\sin 4x} = \frac{\cos 2x(-2\sin 2x + 1)}{-\cos 2x\cdot\sin 4x} = 0 \Rightarrow -2\sin 2x = -1$

$\Rightarrow \sin 2x = +\frac{1}{2} \Rightarrow 2x = \frac{\pi}{6} \Rightarrow x = \frac{\pi}{12}, \ 2x = \frac{5\pi}{6} \Rightarrow x = \frac{5\pi}{12}$ $\Big\}\ \alpha = \frac{\pi}{12}$, $\boxed{\tan 4x = -\sqrt{3}}$

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

و $\cos(x + \frac{\pi}{4}) = \sin(\frac{\pi}{2} - x - \frac{\pi}{4}) = \sin(-x + \frac{\pi}{4}) \Rightarrow \cos x - \sin x = \sqrt{2}\times\frac{1}{\sqrt{3}} = \sqrt{\frac{2}{3}}$

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

$\sin(2x) = \frac{1}{3}$ $\quad m\sqrt{\frac{2}{3}} - 3\sqrt{6}\times\frac{1}{3} = \sqrt{6} \Rightarrow m\sqrt{\frac{2}{3}} - \sqrt{6} = \sqrt{6}$

$\Rightarrow m = \frac{2\sqrt{6}}{\sqrt{\frac{2}{3}}} \Rightarrow m = 2\sqrt{6}\times\sqrt{\frac{3}{2}} = 2\sqrt{9} = 2\times 3 = 6$

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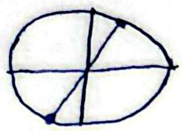
$\sin(x+\frac{\pi}{6}) = \cos(-\frac{\pi}{2}+x+\frac{\pi}{6}) = \cos(x-\frac{\pi}{3}) \Rightarrow \cos(x-\frac{\pi}{3})^2=1$

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



۲ جواب

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$\sin x+\sqrt{3}\cos x=\sqrt{2} \Rightarrow \sin x+\sqrt{3}\cos x = \sqrt{4}\sin(x+\frac{\pi}{3}) \rightarrow \tan\alpha=\sqrt{3} \Rightarrow \alpha=\frac{\pi}{3}$

$\Rightarrow \sqrt{4}\sin(x+\frac{\pi}{3})=\sqrt{2} \Rightarrow \sin(x+\frac{\pi}{3})=\frac{\sqrt{2}}{2} \Rightarrow x+\frac{\pi}{3}=2k\pi+\frac{\pi}{4}$, $2k\pi+\frac{3\pi}{4}$

$x+\frac{\pi}{3}=2k\pi+\frac{\pi}{4} \Rightarrow x=2k\pi-\frac{\pi}{12} \rightarrow$

k	0	1
x	$-\frac{\pi}{12}$ ✓	$\frac{23\pi}{12}$

$x+\frac{\pi}{3}=2k\pi+\frac{3\pi}{4} \Rightarrow x=2k\pi+\frac{5\pi}{12} \rightarrow$

k	0
x	$\frac{5\pi}{12}$

$\frac{23\pi}{12}+\frac{5\pi}{12}=\frac{28\pi}{12}$

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$\sin(\frac{3\pi}{2}-x)=-\cos x \Rightarrow -4\sin x\cdot\cos x=1 \Rightarrow -2\sin 2x=1$

$\Rightarrow \sin 2x=-\frac{1}{2} \Rightarrow 2x=2k\pi-\frac{\pi}{6} \Rightarrow x=k\pi-\frac{\pi}{12}$

$2x=2k\pi+\pi+\frac{\pi}{6} \Rightarrow x=k\pi+\frac{7\pi}{12}$

k	0	1	2
x	×	$\frac{11\pi}{12}$	$\frac{23\pi}{12}$

k	0	1
x	$\frac{7\pi}{12}$	$\frac{19\pi}{12}$

$\frac{11\pi+23\pi+7\pi+19\pi}{12}=\boxed{5\pi}$

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ساده‌شده عبارت: $\cos^2\alpha\times\cos^2 2\alpha\times\cos^2 4\alpha=\frac{1}{64} \Rightarrow \cos\alpha\cdot\cos 2\alpha\cdot\cos 4\alpha=\pm\frac{1}{8}$

$\xrightarrow{\text{طرفین}} \frac{\sin\alpha}{\sin\alpha}\times$ $\frac{\frac{1}{2}\sin 2\alpha\times\cos 2\alpha\times\cos 4\alpha}{\sin\alpha}=\pm\frac{1}{8} \Rightarrow \frac{\frac{1}{8}\sin 8\alpha}{\sin\alpha}=\pm\frac{1}{8}$

$\Rightarrow \frac{1}{8}\sin 8\alpha=+\frac{1}{8}\sin\alpha \Rightarrow \alpha=\frac{2k\pi}{7}$, $\alpha=\frac{2k\pi}{9}+\frac{\pi}{9}$

$\frac{1}{8}\sin 8\alpha=-\frac{1}{8}\sin\alpha \rightarrow \alpha=\frac{2k\pi}{9}$, $\alpha=\frac{2k\pi}{7}+\frac{\pi}{7}$

max عضو A مربوط

برابر دو است

عضو ۵

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$\tan 3x=\frac{1}{\tan x} \Rightarrow \tan 3x=\cot x \Rightarrow \tan 3x=\tan(\frac{\pi}{2}-x)$

$\Rightarrow 3x=k\pi+\frac{\pi}{2}-x \Rightarrow 4x=k\pi+\frac{\pi}{2} \Rightarrow x=\frac{k\pi}{4}+\frac{\pi}{8}$

k	0	1	2	3
x	$\frac{\pi}{8}$ ×	$\frac{3\pi}{8}$ ×	$\frac{5\pi}{8}$ ✓	$\frac{7\pi}{8}$ ✓

$\frac{5\pi+7\pi}{8}=\frac{12\pi}{8}=\boxed{\frac{3\pi}{2}}$