۱۴,۷۵

نام و نام خانوادگی ..محمد پارسا آذرنیا...... پاسخنامه تشریحی تکلیف شماره ...۱۶... کلاس ....

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الف) $\cos^2 x - \sin^2 x = 3\sin x - 1 \to 2\cos^2 x - 1 = 3\sin x - 1$

$2 - 2\sin^2 x + 3\sin x = 0 \to \sin x = \begin{cases} \frac{1}{2} \\ -2 \ \times \end{cases} \to \sin x = \frac{1}{2} \to x = 30^\circ$

$x = 2k\pi + \frac{\pi}{6}$ ، $x = 2k\pi + \frac{5\pi}{6}$

۱,۵

ب) $\cos^2 x - \sin^2 x + \cos x - 2 = 0$

$2\cos^2 x + \cos x - 3 = 0 \to \cos x = \begin{cases} 1 \\ -\frac{3}{2} \ \times \end{cases} \to \cos x = 1 \to x = 360^\circ$

$x = 2k\pi$

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الف) $-\cos 2x = \sin 4x \to -\cos 2x = 2\sin 2x \cos 2x \to 2\sin 2x = -1$

$\cos 2x(2\sin 2x + 1) = 0$

$\sin 2x = -\frac{1}{2} \to x = 2k\pi + \frac{7\pi}{12}, (2k+1)\pi - \frac{\pi}{12}$ ، $\cos 2x = 0$ ، $x = \frac{k\pi}{2} + \frac{\pi}{4}$

$\sin 2x = -\frac{1}{2}$ ، $k\pi + \frac{7\pi}{12}$ ، $k\pi - \frac{\pi}{12}$

۰,۵

ب) $\cos 2x + \sin 2x = 0 \to \tan 2x = -1 \to$

$\cos 2x + \sin 2x = 0$

$1 + \tan 2x = 0 \to x = \frac{k\pi}{2} - \frac{\pi}{8}$ ، $x = 67{,}5^\circ, 157{,}5^\circ \to x = 2k\pi + \frac{12{,}5\pi}{36}, 2k\pi + \frac{31{,}5\pi}{36}$

۳

الف) $\frac{2\cos^2 x}{\sin x} + \frac{\cos x}{\sin x} = \frac{1}{\sin x} \to 2\cos^2 x + \cos x - 1 = 0 \to x = \begin{cases} -1 \\ \frac{1}{2} \end{cases}$

$x = 180^\circ, 60^\circ, 300^\circ \to x = (2k+1)\pi, 2k\pi \pm \frac{\pi}{3}$

۱,۵

ب) $\sin^2 x - \sin x \cos x = 1 \to \cancel{\tan^2 x} - \tan x = 1 + \cancel{\tan^2 x}$

$\tan x = -1 \to x = ~~135^\circ, 315^\circ \to x = 2k\pi - \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4}~~$ $x = k\pi - \frac{\pi}{4}$

۴

الف) $\cos(\frac{\pi}{4} + x)\cos(x - \frac{\pi}{4}) = \frac{1}{2}(\cos 2x + \cancel{\cos \frac{\pi}{2}})$

0

$\frac{1}{2}\cos 2x = \frac{1}{4} \to \cos 2x = \frac{1}{2}$

30° ، -30°

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

$x = -\frac{\pi}{6} + k\pi$

۱,۲۵

ب) $\cos(\frac{3\pi}{2} - 2x) = \sin 2x$ — با اصل زیاد دارد

$2x - \frac{\pi}{4} = 2k\pi - 2x - \frac{\pi}{2} \to x = \frac{k\pi}{2} - \frac{\pi}{16}$ ، $x = \frac{29\pi}{72} + \frac{k\pi}{2}$ ، $\frac{7\pi}{72}$

۵

$\frac{2\sin^2 x \cos^2 x + \sin^2 x}{\sin^2 x} - \sin^2 x = 2\cos 2x + 1 - \sin^2 x = \cancel{\cos^2 x}$

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

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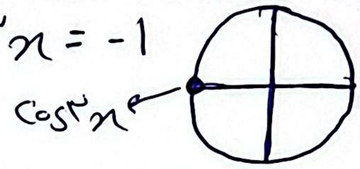
$\cos^2 x = \sin^2 x \to x = 45^\circ, 135^\circ, 225^\circ, 315^\circ \to x = \frac{k\pi}{2} + \frac{\pi}{4}$

$\frac{1-\cos\frac{x}{2}}{\sin\frac{x}{2}} - \frac{1}{\sin\frac{x}{2}} = \frac{\cos\frac{x}{2}}{\sin\frac{x}{2}} \to 2\cos\frac{x}{2} = 0 \to \cos\frac{x}{2} = 0$ ۶

$x = 180°, 540°, 900°, \ldots \to [-\pi, \frac{3\pi}{2}] \to -\pi, \pi$ ۲

$|\pi - (-\pi)| = \boxed{2\pi}$

$-\sin^2 x \cos 3x = \frac{\cancel{1-\cos^2 x}}{\sin^2 x} \to \cos 3x = -1$



$3x = 180°, 540°, 900°, \ldots \to \boxed{x = 60°, 180°, 300°}$ ۱٫۵ ۷

$x = \frac{\pi}{3}, \pi, \frac{5\pi}{3} \to \boxed{۳ \text{ جواب}}$ ۰, ۲π

$\frac{1-\tan x}{1+\tan x} = \tan(\frac{\pi}{4} - x) = \tan 3x$ ۱٫۵

$3x = \frac{\pi}{4} - x \to \frac{\pi}{4} - x = 3x + k\pi \to \frac{\pi}{4} - 4x = k\pi$ ۸

$\tan(\frac{\pi}{4} - x) = \tan 3x \to \frac{\pi}{4} - x = k\pi + 3x \to 4x = \frac{k\pi}{4} + \frac{\pi}{16}$

$\boxed{x = \frac{\pi}{16} - \frac{k\pi}{4}}$

$x + \frac{\pi}{4} = \pi - (\frac{\pi}{2} - 2x)$ ؛ حالت ۲

$\boxed{x = [redacted] 2\pi - \frac{\pi}{4}}$

$\sqrt{1+\sin 2x} = \sqrt{(\sin x + \cos x)^2} = \sin x + \cos x$

$\sin x + \cos x = \sqrt{2}(\cos^2 x - \sin^2 x) = \sqrt{2}(2\cos^2 x - 1)$ ۹

$\sin x + \cos x = \cancel{\sqrt{2}}\cos 2x = \cancel{\sqrt{2}}\sin(x + \frac{\pi}{4})$ $\boxed{x = \frac{\pi}{12}}$ ۲ حالت ۱

$\sin(x + \frac{\pi}{4}) = \sin(\frac{\pi}{2} - 2x) \to x + \frac{\pi}{4} = \frac{\pi}{2} - 2x$

الف) $-(\cos^4 x - \sin^4 x) = -\cos 2x = 1 \to \cos 2x = -1$ ، $\frac{3\pi}{2}, \frac{\pi}{2}$

[redacted] $\pi + \frac{\pi}{2} = x = \frac{[redacted]\pi}{2}$ [redacted]

ب) ۱٫۵ ۱۰

حالت یک: $\sin x = -1, \cos x = 0 \to x = \frac{3\pi}{2}$

حالت دو: $\sin x = 0, \cos x = 1 \to x = 0, 2\pi$