نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

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

$2\cos^2 x + \cos x - 3 = 0$

$\cos x = 1 \quad \cos x = -\frac{3}{2}$ (غ ق ق)

$x = 2k\pi$

$1 - 2\sin^2 x = 2\sin x - 1$

$-2\sin^2 x - 2\sin x + 2 = 0$

$\sin x = -\frac{2}{2}, \frac{1}{2}$ (غ ق ق)

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

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

$\to \tan^2 x = -1$

$\to 2x = k\pi - \frac{\pi}{4}$

$\to x = \frac{k\pi}{2} - \frac{\pi}{8}$

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

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

$\to \cos 2x = 0$

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

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

$2\cos^2 x + \cos x = 1$

$\sin x \neq 0$

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

$\cos x = \frac{1}{2}$ ق ق $\quad \cos x = -1$

$x = 2k\pi \pm \frac{\pi}{3}$ ق ق $\quad x \neq k\pi$

$\div \sin^2 x$

$2 - 2\cot x + \cot^2 x = \frac{2}{\sin^2 x}$

$2\cot^2 x + \cot x = 0$

$\cot x = 0 \to x = k\pi + \frac{\pi}{2}$

$\cot x = -1 \to x = k\pi - \frac{3\pi}{4}$

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

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

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

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

$\sin 2x \neq 0$

$2\cos 2x + 1 = 1$

$\to \cos 2x = 0$

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

$2x \neq k\pi \iff x \neq \frac{k\pi}{2}$

$\frac{\sin\frac{x}{2}}{1+\cos\frac{x}{2}} = \frac{1}{\sin\frac{x}{2}} + \frac{\cos x/2}{\sin\frac{x}{2}} = \frac{1+\cos x/2}{\sin x/2}$

$x = -\pi$
$x = \pi$
$|x_1 - x_2| = 2\pi$

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

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

$\cos x/2 + 2\cos x/2 = 0 \rightarrow \cos x/2 = 0$

$\cos x/2 = -1$

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

$-\sin^2 x \neq 0$

$\cos 2x = 1 \rightarrow 2x = 2k\pi$

$\rightarrow x = \frac{2k\pi}{2}$

$\sin^2 x \neq 0 \rightarrow \sin x \neq 0 \rightarrow x = k\pi$

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$\frac{\tan\frac{\pi}{4} - \tan x}{1 + \tan x \tan\pi/4} = \tan 2x$

$1 + \tan x \neq 0$

$\tan x \neq -1$

$x \neq k\pi - \frac{\pi}{4}$

$\tan(\frac{\pi}{4} - x) = \tan 2x$

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

$\rightarrow x = \frac{k\pi}{3} + \frac{\pi}{12}$

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

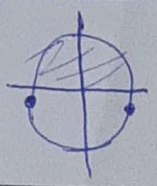
$(\cos x - \sin x)((\cos x + \sin x)$

$\rightarrow \cos x - \sin x = \frac{\sqrt{2}}{2}$, $\cos x - \sin x = -\frac{\sqrt{2}}{2}$

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

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

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



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

$1 - 2\cos^2 x = 1$

$\cos 2x = -1 \rightarrow 2x = 2k\pi + \pi$

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

$x = \frac{\pi}{2}$