نام و نام خانوادگی آیدین حبیب اللهی ... پاسخنامه تشریحی تکلیف شماره .... کلاس A دوازدهم پسر

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الف)

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

$2\sin^2\alpha + 3\sin\alpha - 2 = 0$

$(2\sin\alpha - 1)(\sin\alpha + 2) = 0$

$\sin\alpha = -2$ غ ق ق

$\sin\alpha = \frac{1}{2}$

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

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

2

ب)

$\cos 2\alpha = 2\cos^2\alpha - 1$ | $2\cos^2\alpha + \cos\alpha - 3 = 0$

$\cos\alpha = 1 \longrightarrow \alpha = 2k\pi$

$\cos\alpha = \frac{-3}{2}$ غ ق ق

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الف)

$\sin^4 - \cos^4 = -\cos 2\alpha = 2\sin 2\alpha \cos 2\alpha$

$\cos 2\alpha (1 + 2\sin 2\alpha) = 0$ $\quad \cos 2\alpha = 0$ ①

$2\alpha = k\pi \quad \alpha = \frac{k\pi}{2}$

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

$2\alpha \to 2k\pi - \frac{\pi}{6}$ $\quad \alpha = k\pi - \frac{\pi}{12}$ ②

$\searrow 2k\pi - \frac{5\pi}{6}$ $\quad k\pi - \frac{5\pi}{12}$

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

ب)

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

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

$\tan 2\alpha = -1$

$2\alpha = k\pi + \frac{3\pi}{4}$

$\alpha = \frac{k\pi}{2} + \frac{3\pi}{8}$

(تصحیح معلم: $\cos 2x + \sin 2x = 0$؛ $\tan 2x = -1 \to x = \frac{k\pi}{2} - \frac{\pi}{8}$)

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الف)

$\frac{1}{\sin}\left[\cos(2\cos + 1) - 1\right]$

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

$\cos = -1 \to 2k\pi + \pi$ غ ق ق $\to \sin = 0$

$\cos = \frac{1}{2} \quad \alpha = 2k\pi \pm \frac{\pi}{3}$

ب)

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

$-\cos^2 - \sin\cos = 0 \quad -\cos(\cos + \sin) = 0$

$-\cos\alpha = 0 \quad \alpha = k\pi$ ①

$\cos + \sin = 0 \xrightarrow{\div \cos} \tan = -1$

$\alpha = k\pi + \frac{3\pi}{4}$ ②

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4

الف)

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

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

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

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

$x = k\pi \pm \frac{\pi}{3}$

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ب)

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

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

$2x - \frac{\pi}{9} = \to 2k\pi + 2x + \frac{\pi}{2}$ غ ق ق

$\searrow 2k\pi - 2x - \frac{\pi}{2}$

$4x = 2k\pi - \frac{7\pi}{18} \quad x = \frac{k\pi}{2} - \frac{7\pi}{72}$

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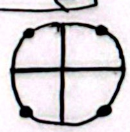
$\frac{\sin 4x + \sin 2x - \sin 2x}{\sin 2x} = 0 \qquad \frac{\sin 4x}{\sin 2x} = 0$

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

$4x = k\pi \longrightarrow x = \frac{k\pi}{4} + \frac{\pi}{4}$ (تصحیح معلم: $\frac{k\pi}{2}$)

$x = \frac{k\pi}{4} \longrightarrow \frac{k\pi}{2}$ غ ق ق



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$\frac{\sin\frac{x}{2}}{1+\cos\frac{x}{2}} = \tan\frac{x}{4}$ $\quad \frac{1}{\sin\frac{x}{2}} + \frac{\cos\frac{x}{2}}{\sin\frac{x}{2}} = \frac{1+\cos\frac{x}{2}}{\sin\frac{x}{2}} = \cot\frac{x}{4}$

$\tan\frac{x}{4} - \cot\frac{x}{4} = 0$ $\quad \tan^2\frac{x}{4} = 1$ $\quad |\pi - 6\pi| = 5\pi$

$\tan\frac{x}{4} = \pm 1$ $\quad \frac{x}{4} = k\pi \pm \frac{\pi}{4}$ $\quad x = 4k\pi \pm \pi$

$-\pi, \pi$ $\quad \sin\frac{\pi}{4}, \sin\frac{-\pi}{4} \neq 0$ ✓

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

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

$\sin^2 x = 0$ $\quad x = k\pi$ ① $\quad x = \frac{2k\pi}{3} + \frac{\pi}{3}$

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

π = جواب مضاعف!

۴ جواب

$\frac{3\pi}{3}, \pi, 2\pi, 0$, $\frac{\pi}{3}$

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$\frac{1-\tan}{1+\tan} = \frac{1}{\tan(x+\frac{\pi}{4})} = \cot(x+\frac{\pi}{4}) = \tan(2x)$

باید هم باشند

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

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

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

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

$\cos^2 - \sin^2$

$|\sin+\cos| \rightarrow [0, \frac{3\pi}{4}] = \sin+\cos \Rightarrow (\sin+\cos) = \sqrt{2}(\sin+\cos)(\cos-\sin)$

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

$x = \frac{\pi}{12}$ جواب ①

کل ① جواب = $\frac{\pi}{12}$

$[\frac{3\pi}{4}, \pi] \rightarrow -\sin - \cos = \sqrt{2}(\sin+\cos)(\cos-\sin)$

$\frac{-\sqrt{2}}{2} = -\sqrt{2}\sin(x - \frac{\pi}{4})$ $\quad \sin(x-\frac{\pi}{4}) = \frac{1}{2}$

۹ در بازه $\pi, \frac{3\pi}{4}$ صدق می‌کند

۱,۵

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(الف

$\sin^4 - \cos^4 = -\cos 2x$

$\cos 2x = -1$

$2x = 2k\pi + \pi \Rightarrow \boxed{x = k\pi + \frac{\pi}{2}}$

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(ب

$2\pi, 0, \frac{3\pi}{2}$

۳ جواب

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

۲ جواب دارد

$\sin 2x = -1 \rightarrow 2x = k\pi - \frac{\pi}{4} \rightarrow \frac{3\pi}{4}$

$2x = k\pi + \frac{\pi}{12} \rightarrow \frac{\pi}{12}$

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