نام و نام خانوادگی ...طاها حق جویی...... پاسخنامه تشریحی تکلیف شماره ..۱۷.. کلاس ..دوازدهم پسر A......

۱

$1+\tan^2 x=\frac{1}{\cos^2 x}=8\cos x\to 1=8\cos^3 x\to \cos x=\frac{1}{2}=\cos\frac{\pi}{3}$

$\to x=2k\pi\pm\frac{\pi}{3}\to x=\frac{\pi}{3},\ \frac{5\pi}{3}\to$ ۲جواب

۲

$5(1-\cos^2 x)+2\cos 3x+2=0\to 8\cos^3 x-5\cos^2 x-6\cos x+7=0$

$\xrightarrow[\text{برابر}]{\text{جمع ضرایب یکی در میان}}(\cos x+1)\underbrace{(8\cos^2 x-13\cos x+7)}_{\Delta<0}=0\to\cos x=-1=\cos\pi$

$\to x=2k\pi+\pi\to x=-\pi,\ \pi\to$ ۲جواب

۳

$2\sin x(1-2\sin^2 x)+\sin x=1\to\underbrace{\cancel{2\sin x}-4\sin^3 x+\cancel{\sin x}}_{3\sin x}=1=\sin 3x=\sin\frac{\pi}{2}$

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

$\Rightarrow x=\frac{\pi}{6},\ \frac{5\pi}{6},\ \frac{3\pi}{2}$

۴

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

$\to 1=\frac{1}{2\sin 2x}\to\sin 2x=\frac{1}{2}=\sin\frac{\pi}{6}\to\begin{cases}2x=2k\pi+\frac{\pi}{6}\to x=k\pi+\frac{\pi}{12}\\ 2x=2k\pi+\pi-\frac{\pi}{6}\to x=k\pi+\frac{\pi}{2}-\frac{\pi}{12}\end{cases}$

$\to\begin{cases}x_1=\frac{\pi}{12}\\ x_2=\frac{5\pi}{12}\end{cases}\to x_2-x_1=\frac{4\pi}{12}=\frac{\pi}{3}\to 2\alpha=\frac{2\pi}{3}\to\tan\frac{2\pi}{3}=-\sqrt{3}$

۵

$\cos(x+\frac{\pi}{4})=\frac{1}{\sqrt{2}}(\cos x-\sin x)=\frac{1}{\sqrt{3}}\to\cos x-\sin x=\frac{\sqrt{6}}{3}$

$\xrightarrow[2]{\text{توان}}1-\sin 2x=\frac{2}{3}\to\sin 2x=\frac{1}{3}$

$\frac{m\sqrt{6}}{3}-\frac{3\sqrt{6}}{3}=\sqrt{6}\to\frac{m}{3}-1=1\to\underline{m=6}$

۶

$$\sin(x+\tfrac{\pi}{6})\cos(\tfrac{\pi}{3}-x)=\sin^2(x+\tfrac{\pi}{6})=1\longrightarrow\begin{cases}\sin(x+\frac{\pi}{6})=1=\sin\frac{\pi}{2}\\ \sin(x+\frac{\pi}{6})=-1=\sin\frac{3\pi}{2}\end{cases}$$

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

$$\longrightarrow x+\frac{\pi}{6}=2k\pi+\frac{3\pi}{2}\rightarrow x=\frac{4\pi}{3}$$ $\longrightarrow$ ۲ جواب

۷

$$\sin x+\frac{\sin\frac{\pi}{3}}{\cos\frac{\pi}{3}}\cos x=\sqrt{2}\longrightarrow\frac{\sin x\cos\frac{\pi}{3}+\sin\frac{\pi}{3}\cos x}{\cos\frac{\pi}{3}}=\sqrt{2}$$

$$\sin(x+\tfrac{\pi}{3})=\frac{\sqrt{2}}{2}=\sin\frac{\pi}{4}\longrightarrow\begin{cases}x+\frac{\pi}{3}=2k\pi+\frac{\pi}{4}\rightarrow x=2k\pi-\frac{\pi}{12}\\ x+\frac{\pi}{3}=2k\pi+\pi-\frac{\pi}{4}\rightarrow x=2k\pi-\frac{\pi}{12}\end{cases}$$

$$x=-\frac{\pi}{12},\ \frac{23\pi}{12}\xrightarrow{\text{جمع}}\frac{22\pi}{12}=\frac{11\pi}{6}$$

۸

$$-4\sin x\cos x=-2\sin 2x=1\rightarrow\sin 2x=-\frac{1}{2}=\sin(-\tfrac{\pi}{6})$$

$$\begin{cases}2x=2k\pi+\frac{\pi}{6}\longrightarrow x=\frac{11\pi}{6}\\ 2x=2k\pi+\pi-\frac{\pi}{6}\longrightarrow x=\frac{7\pi}{6}\end{cases}\ +=3\pi$$

۹

$$2\cos^2\alpha\times2\cos^2 2\alpha\times2\cos^2 4\alpha=8\frac{\sin^2\alpha}{\sin^2\alpha}\cos^2\alpha\cos^2 2\alpha\cos^2 4\alpha$$

$$=2\frac{\sin^2 2\alpha}{\sin^2\alpha}\cos^2 2\alpha\cos^2 4\alpha=\frac{1}{2}\frac{\sin^2 4\alpha}{\sin^2\alpha}\cos^2 4\alpha=\frac{1}{\cancel{8}}\frac{\sin^2 8\alpha}{\sin^2\alpha}=\frac{1}{\cancel{8}}$$

$$\rightarrow\begin{cases}\sin 8\alpha=\sin\alpha\rightarrow\begin{cases}8\alpha=2k\pi+\alpha\rightarrow7\alpha=2k\pi\rightarrow\alpha=0\\ 2k\pi+\pi-\alpha\rightarrow9\alpha=2k\pi+\pi\rightarrow\alpha=\frac{\pi}{9}\end{cases}\\ \sin 8\alpha=-\sin\alpha=\sin(-\alpha)\rightarrow\begin{cases}8\alpha=2k\pi-\alpha\rightarrow9\alpha=2k\pi\rightarrow\alpha=0\\ 2k\pi+\pi+\alpha\rightarrow7\alpha=2k\pi+\pi\rightarrow\alpha=\frac{\pi}{7}\ \checkmark\end{cases}\end{cases}$$

۱۰

$$\tan 3x=\cot x=\tan(\tfrac{\pi}{2}-x)\rightarrow3x=k\pi\pm(\tfrac{\pi}{2}-x)\rightarrow4x=k\pi\pm\frac{\pi}{2}$$

$$\rightarrow x=k\frac{\pi}{4}\pm\frac{\pi}{8}\longrightarrow x=\frac{9\pi}{8},\ \frac{11\pi}{8},\ \frac{13\pi}{8},\ \frac{15\pi}{8}$$

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