نام و نام خانوادگی ...علیرضا نیکوبین... پاسخنامه تشریحی تکلیف شماره ..۱۷.. کلاس ...دوازدهم A...

۱۵٫۵

۱

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

$\overset{\cos x \neq 0}{\Rightarrow} \cos^3 x = \frac{1}{8} \Rightarrow \cos x = \frac{1}{2} = \cos\frac{\pi}{3}$

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

② ✓

۲

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

$8\cos^3 x - 5\cos^2 x - 6\cos x + 7 = 0$

$8t^3 - 5t^2 - 6T + 7 = (t+1)(\underset{\Delta<0}{8t^2 - 13t + 7})$

$\cos x = -1 = \cos\pi \Rightarrow x = 2k\pi + \pi \longrightarrow x = \pi, -\pi$

② ✓

۳

$2\sin x(1-2\sin^2 x) + \sin x = 1$

$3\sin x - 4\sin^3 x = 1 \Rightarrow \sin 3x = \sin\frac{\pi}{2}$

$3x = 2k\pi + \frac{\pi}{2} \Rightarrow x = \frac{2k\pi}{3} + \frac{\pi}{6} \rightarrow \frac{\pi}{6} + \frac{5\pi}{6} + \frac{9\pi}{6} = \frac{5\pi}{2}$ ✓

~~$\frac{\pi}{6} + \frac{2\pi}{3} + \frac{\pi}{6} + \frac{4\pi}{3} + \frac{\pi}{6}$~~ $= 75\pi$

①٫۵

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$\frac{1}{\cos 2x} + \frac{1}{-\sin 4x} = 0$

$\frac{\cos 2x - \sin 4x}{-\cos 2x \sin 4x} = 0 \Rightarrow \cos 2x = \sin 4x = 2\sin 2x \cos 2x$

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

$2x = 2k\pi + \frac{\pi}{6} \Rightarrow x = k\pi + \frac{\pi}{12}$ $\quad \alpha = \frac{5\pi}{12} - \frac{\pi}{12} = \frac{\pi}{3}$

$2x = 2k\pi + \frac{5\pi}{6} \Rightarrow x = k\pi + \frac{5\pi}{12}$ $\quad \tan\frac{2\pi}{3} = -\sqrt{3}$

② ✓

۵

$\frac{1}{\sqrt{2}}\cos x - \sin x \times \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{3}}$

$\cos x - \sin x = \sqrt{\frac{2}{3}} \Rightarrow 1 - \sin 2x = \frac{2}{3} \rightarrow \sin 2x = \frac{1}{3}$

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

② ✓

$x+\frac{\pi}{۴}-(x-\frac{\pi}{۴})=\frac{\pi}{۲}$　　$\sin(x+\frac{\pi}{۴})=\pm۱$

$\sin(x+\frac{\pi}{۴})\cos(x+\frac{\pi}{۴}-\frac{\pi}{۲})=۱$　　$x+\frac{\pi}{۴}=۲k\pi\pm\frac{\pi}{۲}$　　۶

$\sin(x+\frac{\pi}{۴})=۱$

$\boxed{\sqrt{۲}}$

② ✓

✓

$\sin(x+\frac{\pi}{۳})=\frac{\sqrt{۲}}{۲}$　　$\frac{۱}{۲}$ رو در معادله ضرب می‌کنیم .

$x+\frac{\pi}{۳}=۲k\pi+\frac{\pi}{۴}\rightarrow ۲k\pi-\frac{\pi}{۱۲}\rightarrow x=-\frac{\pi}{۱۲},\frac{۲۳\pi}{۱۲}$　　۷

$x+\frac{\pi}{۳}=۲k\pi+\frac{۳\pi}{۴}\rightarrow ۲k\pi+\frac{۵\pi}{۱۲}\rightarrow x=\frac{۵\pi}{۱۲}$

جمع ریشه‌ها $=\frac{۹\pi}{۴}$

۵

$-۴\sin x\times\cos x=۱$　　۵

$-۲(۲\sin x\cos x)=۱\rightarrow -۲\sin ۲x=۱$　　$\sin ۲x=-\frac{۱}{۲}$　　۸

$۲x=۲k\pi-\frac{\pi}{۶}\rightarrow x=k\pi-\frac{\pi}{۱۲}$

$۲x=۲k\pi+\frac{۷\pi}{۶}$　　$x=k\pi+\frac{۷\pi}{۱۲}$　　$\Big\}+=۵\pi$

$۲\cos^۲\alpha\times۲\cos^۲۲\alpha\times۲\cos^۲۴\alpha=\frac{۱}{۸}\rightarrow\times۸\sin^۲\alpha\rightarrow ۶۴\sin^۲\alpha\times\cos^۲\alpha\times\cos^۲۲\alpha\times\cos^۲۴\alpha=\sin^۲\alpha$

$\Rightarrow\sin\alpha=\sin۸\alpha$ یا $\sin\alpha=-۸\alpha$

$۲k\pi+\alpha=۸\alpha$　　$۲k\pi+\alpha=-۸\alpha$

$۲k\pi+\pi-\alpha=۸\alpha$　　$۲k\pi+\pi-\alpha=-۸\pi$

$\Rightarrow\frac{۲k\pi}{۷}=\alpha$　　$-\frac{۲k\pi}{۹}=\alpha$

$\frac{۲k\pi+\pi}{۹}=\alpha$ ② ✓　　$-\frac{۲k\pi+\pi}{۷}=\alpha$

$\xrightarrow[\text{max}]{k=۴}\frac{۲\times۴\times\pi+\pi}{۹}=\pi$　　$\sin\alpha\neq۰$ غ ق ق　　۹

$[۰,\pi]$

$\xrightarrow[\text{max}]{k=-۴}\frac{-(-۴)\times۲\pi}{۹}=\frac{۸\pi}{۹}$ ق ق

$\Rightarrow\tan۳x=\cot x\Rightarrow\tan۳x=\tan\frac{\pi}{۲}-x$

$\tan\neq۰$　　$۳x=k\pi+\frac{\pi}{۲}-x\Rightarrow ۴x=k\pi+\frac{\pi}{۲}\Rightarrow x=\frac{k\pi}{۴}+\frac{\pi}{۸}=\frac{(۲k+۱)\pi}{۸}$

$k=۴\longleftrightarrow k=۷$　　۱۰

$\frac{۹\pi}{۸}$　$\frac{۱۱\pi}{۸}$　$\frac{۱۳\pi}{۸}$　$\frac{۱۵\pi}{۸}$　$\longrightarrow$　$\underline{۶\pi}$

② ✓