۱۵٪ امتحانی - دوازدهم تجربی B   به نام خدا   ۲۰ آفرین   تکلیف سری ۱۰/۱۵

۱-

$T = \frac{\pi}{|-2|} \rightarrow \tan\frac{\pi}{4} = 1 \qquad \frac{\frac{\pi}{2}+1}{2} = \frac{\pi}{4}$ ✓ ۲

۲-

$x^2 - \sin x - \frac{1}{4}\cos^2 x = 0 \rightarrow x = \frac{2}{3} \rightarrow \frac{4}{9} - \frac{2}{3}\sin\alpha - \frac{1}{4}(1-\sin^2\alpha) = 0$

$\frac{1}{4}\sin^2\alpha - \frac{2}{3}\sin\alpha + \frac{7}{36} = 0 \rightarrow 9\sin^2\alpha - 24\sin\alpha + 7 = 0 \rightarrow \sin\alpha = \frac{24 \pm \sqrt{324}}{18}$ $\frac{7}{3}$ ✗ , $\frac{1}{3}$ ۲

$\frac{8}{9} \rightarrow \frac{1}{\cos^2\alpha} = 1 + \tan^2\alpha \rightarrow \frac{9}{8} = \frac{1}{\frac{8}{9}}$ ✓

۳-

$\log^{\sin\alpha} - \log^{-\cos\alpha} = \log^{3} \rightarrow \frac{\sin\alpha}{-\cos\alpha} = 3 \rightarrow \sin\alpha = -3\cos\alpha$ ۲

$\sin^2\alpha + \cos^2\alpha = 1 \rightarrow 10\cos^2\alpha = 1 \rightarrow \cos^2\alpha = \frac{1}{10}$ $\rightarrow +\frac{1}{\sqrt{10}}$, $-\frac{1}{\sqrt{10}}$ ✗ $\log x \rightarrow x > 0$

$\sin\alpha - \cos\alpha = \frac{3}{\sqrt{10}} + \frac{1}{\sqrt{10}} = \frac{4}{\sqrt{10}}$ ✓

۴-

$\sin^4\alpha + \cos^2\alpha = \frac{4}{5} \rightarrow (1-\cos^2 x)^2 + \cos^2\alpha = \frac{4}{5} \rightarrow 1 - 2\cos^2\alpha + \cos^4\alpha + \cos^2\alpha = \frac{4}{5}$ ۲

$\frac{1-\cos^2\alpha}{\sin^2\alpha} + \cos^2\alpha = \frac{4}{5} \rightarrow \sin^2\alpha + \cos\alpha = \frac{4}{5}$ ✓

۵-

$\frac{\sin 2\alpha}{\cos\alpha} - \frac{1}{\cos\alpha} > 0 \rightarrow \frac{\sin\alpha - 1}{\cos\alpha} > 0$ $\rightarrow < 0$ $\rightarrow \cos\alpha < 0$

ناحیه ۳ ✓ ۲

$\frac{\sin(3\pi + \cos\alpha)}{2 - 2\cos^2\alpha} < 0 \rightarrow \frac{\sin\alpha(2+\cos\alpha)}{2\sin^2\alpha} < 0 \rightarrow \sin\alpha < 0$ ✓

$(2(1-\cos^2\alpha)$

$2\sin^2\alpha$

> 0

پرهام سالاری

۶- $\frac{2}{\sin\alpha}+\frac{3}{\cos\alpha}=0 \to \frac{2\cos\alpha+3\sin\alpha}{\sin\alpha\cos\alpha}=0 \to 2\cos\alpha+3\sin\alpha=0 \to \cos\alpha=-\frac{3\sin\alpha}{2}$

$\tan\alpha+\cot\alpha=\frac{\sin\alpha}{\cos\alpha}+\frac{\cos\alpha}{\sin\alpha}=\frac{\cos^2\alpha+\sin^2\alpha}{\sin\alpha\cos\alpha}=\frac{\sin\alpha}{-\frac{3}{2}\sin\alpha}+\frac{-\frac{3}{2}\sin\alpha}{\sin\alpha}=-\frac{2}{3}-\frac{3}{2}=-\frac{13}{6}$

2

۷- $\frac{\sqrt{1+\sin 50}}{\sin 50+\sin 10} \to 1+\sin 50=\sin 90+\sin 50=2\sin(70)\times\cos(20)=2\cos(20)\times\cos(20)=2\cos^2 20$

2

$\sin 50+\sin 10=2\cancel{\sin 30}\cos 20=\cos 20 \to \frac{\sqrt{2}\cos 20}{\cos 20}=\sqrt{2}$

۸- $1-2\sin^2\omega=1-\sin^2\omega-\sin^2\omega \to \cos^2\omega-\sin^2\omega=\cos 10$ / $2\cos^2 10-1=1-\sin^2 10-\cos^2 10=\cos 20$

2

$\frac{1-\tan^2 20}{1+\tan^2 20}=\cos 40 \quad \frac{\cos 10\cdot\cos 20\cdot\cos 40\cdot\sin 10}{\sin 10} \to \frac{1}{8}\frac{\cancel{\sin 80}}{\sin 10}=\frac{1}{8}\cos 10$

۹- $\sin\alpha+3\cos\alpha=2 \to \sin\alpha=2-3\cos\alpha \quad 1=\sin^2\alpha+\cos^2\alpha=(2-3\cos\alpha)^2+\cos^2\alpha=1$

2

$10\cos^2\alpha-12\cos\alpha=-3 \xrightarrow{\cos^2\alpha=\frac{1+\cos 2\alpha}{2}} \cos 2\alpha=2\cos^2\alpha-1 \to 5\cos 2\alpha=10\cos^2\alpha-5 \to 10\cos^2\alpha-12\cos\alpha-5$

$=-8$

۱۰- $\sin\alpha\cdot\sin\beta=\frac{1}{2}(\cos(\alpha-\beta)-\cos(\alpha+\beta)) \to \sin B\cdot\sin C=\frac{1}{2}(\cos(B-C)-\cos(B+C))$

$\cos\alpha\cdot\cos\beta=\frac{1}{2}(\cos(\alpha+\beta)+\cos(\alpha-\beta)),\ \cos\frac{a}{2}\times\cos\frac{a}{2}=\frac{1}{2}(\cos A+\cos 0),\ A+B+C=180$

2

$B=180-(A+C),\ B+C=180-A \to \frac{1}{2}\cos(180-(2C+A))-\cos(180-A))=\frac{1}{2}(-\cos 2C+A+\cos A)$

$\frac{1}{2}\cos A+\frac{1}{2}=-\frac{1}{2}\cos 2C+A+\frac{1}{2}\cos A \to \cos 2C+A=-1 \to 2C+A=180 \to C+B=72$

$\to A=180-(2\times 72)=36$