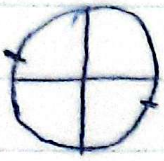
Year Month Date ( ) Subject

بنام خدا تعالی (۲۰) تکلیف عید

۱- $\cot\alpha = \frac{\cos\alpha}{|\sin\alpha|} \longrightarrow \sin\alpha > 0 \Rightarrow$ ناحیه اول (۲)

$\frac{1}{|\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} = \frac{1-\sin\alpha}{|\cos\alpha|} \longrightarrow \cos\alpha > 0$

۲- $-\frac{\pi}{6} < 2m < \frac{5\pi}{6} \qquad -\frac{1}{2} < \frac{m-1}{4} \leq 1 \longrightarrow -1 < m \leq 5$ (۲)



۳- $\frac{1}{\sin\alpha\cos\alpha} = -3 \qquad \frac{3\pi}{4} < \alpha < \pi$ (I) (۲)

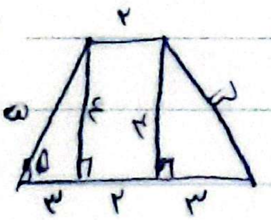
$(\sin\alpha+\cos\alpha)^2 = \underbrace{\sin^2\alpha+\cos^2\alpha}_{1} + 2\underbrace{\sin\alpha\cos\alpha}_{-\frac{2}{3}} \Rightarrow |\sin\alpha+\cos\alpha| = \frac{1}{\sqrt{3}}$

(I) $\downarrow$

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

$\frac{1}{(\sin\alpha+\cos\alpha)(1-\sin\alpha\cos\alpha)} = \frac{1}{-\frac{1}{\sqrt{3}}\times\frac{4}{3}} = \boxed{-\frac{3\sqrt{3}}{4}}$

۴-



$0/6\times 5 = 3$

$S = 2\times 4 + 2\times\frac{1}{2}\times 3\times 4 = \boxed{20}$ (۲)

۵- $\tan(\frac{3\pi}{2}+15)\tan(15-\pi) - \sin(9\pi+15)\cos(\frac{3\pi}{2}-15)$

$-\cot 15 \qquad \tan 15 \qquad \sin 15 \qquad -\sin 15$ (۲)

$-1+\sin^2 15 = -\cos^2 15 \qquad \boxed{k=-1}$

$\sqrt{3}\times -\frac{\sqrt{3}}{3}\times \sin\left(\frac{3\pi}{2}-2x\right) - \sqrt{2}\times\frac{\sqrt{2}}{2}\cos(\pi-2x)$ — ۶

$\frac{3}{2}\cos(2x) + \cos 2x = \frac{5}{2}\cos 2x$ (۲)

$16\cos(3x)\cos(6x)\cos(12x)\cos(24x)$ — ۷

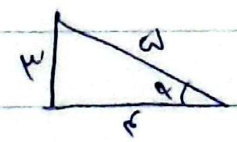
$\sin 6x \quad \sin 12x \quad \sin 24x \quad \sin 48x$

$= \frac{4\cos 3x \sin 3x \; 4\cos 6x \; 4\cos 12x \; 4\cos 24x}{4\times 4\times \sin 3x} = \frac{\sin^2(\pi+\frac{\pi}{3})}{8(1-\cos\frac{\pi}{6})} = \frac{3}{32-16\sqrt{3}}$ (۴)

$\frac{3}{4} \qquad \frac{2-\sqrt{3}}{2}$

$\tan\frac{x}{2} = \frac{\sin\frac{x}{2}}{\cos\frac{x}{2}} = \frac{\frac{3}{\sqrt{10}}}{\frac{-1}{\sqrt{10}}} = -3$ — ۸

$1-\sin x = 4+4\sin x \quad \sin x = -\frac{3}{5} \quad \cos x = -\frac{4}{5} \quad \sin^2\frac{x}{2} = \frac{1+\frac{4}{5}}{2} \to \sin\frac{x}{2} = \frac{3}{\sqrt{10}}$ (۴)



$\cos^2\frac{x}{2} = \frac{1-\frac{4}{5}}{2} \to \cos\frac{x}{2} = \frac{-1}{\sqrt{10}}$

$\frac{\sin\alpha(1+\cos\alpha)}{\sin^2\alpha} + \frac{1+\cos\alpha}{\sin\alpha} = \frac{4\cos^2\frac{\alpha}{2}}{2\sin\frac{\alpha}{2}\cos\frac{\alpha}{2}} = 2\cot\frac{\alpha}{2}$ — ۹

(۲)

$K=2$

$\cos\left(\frac{11\pi}{4}+\alpha\right) = \cos\left(\frac{\pi}{2}+\alpha+\frac{\pi}{4}\right) = -\sin\left(\alpha+\frac{\pi}{4}\right) = \frac{3}{5}$ — ۱۰

$\sqrt{2}\sin\left(\alpha+\frac{\pi}{4}\right) = \underset{\frac{\sqrt{2}}{10}}{\sin\alpha} + \underset{\frac{-\sqrt{2}}{10}}{\cos\alpha} = \sin\left(\alpha+\frac{\pi}{4}\right) = -\frac{3}{5}$ (۲)