نام و نام خانوادگی ...... ارسام ...... پاسخنامه تشریحی تکلیف شماره ...۲/۸... کلاس ...یازدهم...

۲۵ آفرین!

۱ (۲)

$\frac{1}{|\cos|} - \tan = \frac{1-\sin}{|\cos|} \to \frac{1-1+\sin}{|\cos|} = \frac{\sin}{|\cos|} = \tan = \frac{\sin}{\cos} \Rightarrow \cos\alpha > 0$

$\cot = \frac{\cos}{\sin} = \frac{\cos}{|\sin|} \to \sin\alpha > 0$

$\sin\alpha > 0,\ \cos\alpha > 0 \to$ α ناحیه اول ✓

۲ (۲)

$-\frac{\pi}{12} < x < \frac{5\pi}{12} \xrightarrow{\times 2} -\frac{\pi}{6} < 2x < \frac{5\pi}{6} \to -\frac{1}{2} < \sin 2x \le 1$

$\to -\frac{1}{2} < \frac{m-1}{4} \le 1 \to -2 < m-1 \le 4 \to -1 < m \le 5$ ✓

۳ (۲)

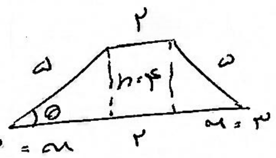
$\tan + \cot = \frac{\sin}{\cos} + \frac{\cos}{\sin} = \frac{1}{\sin\cos} = -3 \to \sin\cos = -\frac{1}{3}$

$(\sin+\cos)^2 = \sin^2+\cos^2+2\sin\cos = 1-\frac{2}{3} = \frac{1}{3} \to \sin+\cos = \pm\sqrt{\frac{1}{3}}$

$\frac{3\pi}{4} < x < \pi \to |\cos| > |\sin| \to \sin+\cos = -\sqrt{\frac{1}{3}} = \frac{-1}{\sqrt{3}}$

$\to \frac{1}{\sin^3+\cos^3} = \frac{1}{(\sin+\cos)(\sin^2+\cos^2-\sin\cos)} = \frac{1}{(\frac{-1}{\sqrt{3}})(1+\frac{1}{3})} = \frac{1}{\frac{-4}{3\sqrt{3}}} = \frac{-3\sqrt{3}}{4}$ ✓

۴ (۲)



$\to S = \frac{1}{2} \times (2+8) \times 4 = 20$ ✓

$\to \cos\theta = \frac{x}{5} = 0.6 \to x = 3$

$h = \sqrt{5^2-3^2} = 4$

۵ (۲)

$\tan(285) = \tan(\frac{3\pi}{2}+15) = -\cot 15$

$\tan(-165) = -\tan(165) = -\tan(\pi-15) = +\tan 15$

$\sin(1095) = \sin(15+6\pi) = \sin 15$

$\cos(255) = \cos(\frac{3\pi}{2}-15) = -\sin 15$

$\overbrace{(-\cot 15 \times \tan 15)}^{-1} - \overbrace{(\sin 15 \times -\sin 15)}^{-\sin^2 15} = \sin^2 15 - 1$

$= -\cos^2 15 = k\cos^2 15 \Rightarrow k = -1$ ✓

۶ (۲)

$\cos 210^\circ = \cos(\pi + 30^\circ) = -\cos 30^\circ = -\frac{\sqrt{3}}{2}$ $\quad \sin(24\pi) = \sin(\frac{3\pi}{2} - 27) = -\cos 27^\circ$

$\sin 135^\circ = \frac{\sqrt{2}}{2}$ $\quad \cos(135^\circ) \cdot \cos(\pi - 27) = -\cos 27^\circ$

$A = (\sqrt{3})(-\frac{\sqrt{3}}{2})(-(\cos 27))(\frac{\sqrt{2}}{2})(-\cos 27^\circ) = \frac{3}{2}\cos 27^\circ + \cos 27^\circ = \frac{5}{2}\cos 27^\circ$

$\frac{A}{\cos 27^\circ} = \frac{5}{2}$ ✓

۷ (۲)

$f(\frac{\pi}{24}) = 14 \underbrace{\cos^2 \frac{\pi}{12}}_{\frac{3}{4}} \times \underbrace{\cos^2 \frac{\pi}{6}}_{\frac{1}{2}} \times \underbrace{\cos^2 \frac{\pi}{3}}_{\frac{1}{4}} \times \underbrace{\cos^2 \frac{2\pi}{3}}_{\frac{1}{4}} = 14 \times \frac{2+\sqrt{3}}{4} \times \frac{3}{4} \times \frac{1}{4} \times \frac{1}{4}$

$= \frac{6+3\sqrt{3}}{16}$ ✓

$\cos^2 \frac{\pi}{12} = \frac{1+\cos \frac{\pi}{6}}{2} = \frac{\frac{2+\sqrt{3}}{2}}{2} = \frac{2+\sqrt{3}}{4}$

۸ (۲)

$4 + 4\sin\alpha = 1 - \sin\alpha \longrightarrow 5\sin\alpha = -3 \longrightarrow \sin\alpha = -\frac{3}{5}$ ✓ $\quad \cos\alpha = -\frac{4}{5}$

$\rightsquigarrow \tan(\frac{\alpha}{2}) = \frac{1-\cos\alpha}{\sin\alpha} = \frac{1-(-\frac{4}{5})}{-\frac{3}{5}} = \frac{\frac{9}{5}}{-\frac{3}{5}} = -3$ ✓

۹ (۲)

$\tan\frac{\alpha}{2} = \frac{\sin\alpha}{1+\cos\alpha} = \frac{1-\cos\alpha}{\sin\alpha} \Rightarrow \frac{1}{\tan\frac{\alpha}{2}} = \cot\frac{\alpha}{2} = \frac{1+\cos\alpha}{\sin\alpha} = \frac{\sin\alpha}{1-\cos\alpha}$

$\rightsquigarrow \frac{\sin\alpha}{1-\cos\alpha} + \frac{1+\cos\alpha}{\sin\alpha} = \cot\frac{\alpha}{2} + \cot\frac{\alpha}{2} = 2\cot\frac{\alpha}{2} \longrightarrow \boxed{k = 2}$ ✓

۱۰ (۲)

$\sin\alpha = \frac{\sqrt{2}}{10}$ $\quad$ (α در ربع دوم) $\quad \cos\alpha = -\frac{\sqrt{98}}{10}$

$\frac{11\pi}{4} = \frac{3\pi}{4}$

$\cos(\frac{11\pi}{4} + \alpha) = \cos(\frac{3\pi}{4} + \alpha) = \cos\frac{3\pi}{4}\cos\alpha - \sin\frac{3\pi}{4}\sin\alpha$

$= (-\frac{\sqrt{2}}{2})(-\frac{\sqrt{98}}{10}) - (\frac{\sqrt{2}}{2})(\frac{\sqrt{2}}{10}) = \frac{\sqrt{196}}{20} - \frac{2}{20} = \frac{14-2}{20} = 0.6$ ✓