نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۲ کلاس ..... A .....

19,75

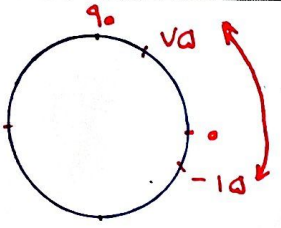
$\frac{1}{|\cos\alpha|} - \tan\alpha = \frac{1-\sin\alpha}{|\cos\alpha|} \rightarrow \frac{1}{|\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} = \frac{1}{|\cos\alpha|} - \frac{\sin\alpha}{|\cos\alpha|}$

$\Rightarrow \frac{\sin\alpha}{\cos\alpha} = \frac{\sin\alpha}{|\cos\alpha|} \Rightarrow \cos\alpha = |\cos\alpha| \rightarrow \cos\alpha > 0 \rightsquigarrow$ ربع ۱ یا ۴

$\cot\alpha = \frac{\cos\alpha\ (+)}{\sqrt{1-\cos^2\alpha\ (+)}} \rightarrow \cot\alpha > 0 \rightsquigarrow$ ربع ۱ یا ۳ ✓

$\cos\alpha > 0 \rightsquigarrow$

۲ / ۱



$\frac{R}{12} = 15^\circ \qquad -15 < x < 75$

بیش‌ترین و کم‌ترین مقدار $\sin 2x$ را حساب می‌کنیم

if $x = 45^\circ \Rightarrow \sin 2x = \sin 90^\circ = 1$ max

if $x = -15^\circ \Rightarrow \sin 2x = \sin -30^\circ = -\frac{1}{2}$ min

$-\frac{1}{2} \leq \frac{m-1}{2} \leq 1 \rightarrow -2 < m-1 \leq 2 \Rightarrow -1 < m \leq 3$ ✓

۲ / ۲

$\tan\alpha + \cot\alpha = \frac{\sin\alpha}{\cos\alpha} + \frac{\cos\alpha}{\sin\alpha} = \frac{\sin^2\alpha + \cos^2\alpha}{\sin\alpha\cos\alpha} = \frac{1}{\frac{1}{2}\sin 2\alpha} = -3$

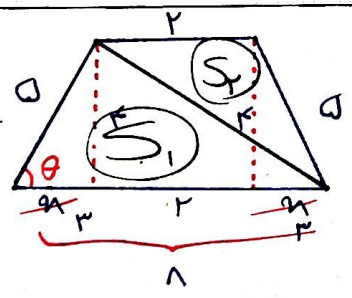
$\Rightarrow \sin 2\alpha = -\frac{2}{3} \rightarrow \sin\alpha\cos\alpha = -\frac{1}{3}$

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

$(\sin\alpha + \cos\alpha)(\sin^2\alpha - \sin\alpha\cos\alpha + \cos^2\alpha)$ ، $\frac{4}{3}$

$\Rightarrow \sin^3\alpha + \cos^3\alpha = \frac{\sqrt{3}}{3} \times \frac{4}{3} = \frac{4\sqrt{3}}{9} \rightarrow \frac{1}{\sin^3\alpha + \cos^3\alpha} = \frac{9}{4\sqrt{3}} = \frac{3\sqrt{3}}{4}$ ✓

۲ / ۳



$\cos\theta = \frac{6}{10} = \frac{3}{5} \Rightarrow x = 3 \Rightarrow \sin\theta = \frac{4}{5}$

$S_1 = \frac{1}{2}\sin\theta \times 5 \times 8 = \frac{1}{2} \times \frac{4}{5} \times 5 \times 8 = 16$

$S_2 = \frac{1}{2}\sin\theta' \times 5 \times 2 = \frac{1}{2} \times \frac{4}{5} \times 5 \times 2 = 4$

$S_{کل} = 16 + 4 = 20$ ✓

$\theta + \theta' = 180 \Rightarrow \sin\theta = \sin\theta'$

۲ / ۴

$\tan(270 + 15)\tan(180 + 15) - \sin(15)\cos(270 - 15)$

$-\cot 15 \times \tan 15 \quad - \quad \sin 15 \times -\sin 15$

$-1 + \sin^2 15 = -\cos^2 15 \cdot K \cos^2 15 \rightarrow K = -1$ ✓

۲ / ۵

$\sqrt{3}\cos(210)\sin(270-27) - \sqrt{2}\sin(135)\cos(180-27)$

$\sqrt{3}\times -\frac{\sqrt{3}}{2}\times -\cos 27^\circ$

$-\sqrt{2}\times \frac{\sqrt{2}}{2}\times -\cos 27$

$\frac{3}{2}\cos 27^\circ + \cos 27 = \frac{5}{2}\cos 27 \rightarrow$ برابر $\frac{5}{2}$

(۲)

$\frac{180}{36} = 5^\circ$ $\qquad 16\cos^2(15)\cos^2(30)\cos^2(90)\cos^2(120)$

$\frac{3}{4}\cos^2 15^\circ$ $\qquad \frac{3}{4}$ $\qquad \frac{1}{4}$ $\qquad \frac{1}{4}$

$\cos^2 15 = \frac{1+\cos 30}{2} = \frac{1+\frac{\sqrt{3}}{2}}{2} = \frac{2+\sqrt{3}}{4} \Rightarrow f(9) = \frac{3}{4}\times\frac{2+\sqrt{3}}{4} = \frac{6+3\sqrt{3}}{16}$ ✓

(۲)

$\frac{1-\sin\alpha}{1+\sin\alpha} = 2 \rightarrow 2+2\sin\alpha = 1-\sin\alpha \rightarrow 3\sin\alpha = -1 \rightarrow \sin\alpha = -\frac{1}{3}$

$1+\cot^2\alpha = \frac{1}{\sin^2\alpha} \Rightarrow \cot\alpha = \frac{2}{1} \rightarrow \tan = \frac{1}{2}$ $\qquad \tan\frac{\alpha}{2} = y$ فرض

$\tan\alpha = \frac{2\tan\frac{\alpha}{2}}{1-\tan^2\frac{\alpha}{2}} \rightarrow \frac{1}{2} = \frac{2y}{1-y^2} \rightarrow 1-y^2 = 4y \rightarrow y^2+4y-1=0$

$\pi < \alpha < \frac{3\pi}{2} \rightarrow \frac{\pi}{4} < \frac{\alpha}{2} < \frac{3\pi}{4}$ ربع دوم

$y^2+4y-5=0 \rightarrow (y-1)(y+5)$ $\qquad y_1 = \frac{1}{2}$ $\qquad y_2 = -5$ غ ق ق ربع

$\tan\frac{\alpha}{2} = \frac{1}{2}$ (سینوس)

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

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

$+ \Big\} 2\cot\frac{\alpha}{2}$

$k = 2$ ✓

(۲)

$\cos(\alpha+\beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta$

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

$\cos\alpha = -\sqrt{1-\sin^2\alpha} = -\sqrt{\frac{98}{100}} = -\frac{7\sqrt{2}}{10}$ $\qquad -\frac{\sqrt{2}}{2}\times -\frac{7\sqrt{2}}{10} - \frac{\sqrt{2}}{2}\times\frac{\sqrt{2}}{10} = \frac{7}{10} - \frac{1}{10}$

$\frac{3}{5} \leftarrow \frac{6}{10}$

(۲)