نام و نام خانوادگی کوروش اسلامیان ..... پاسخنامه تشریحی تکلیف شماره ۲۸ کلاس یازدهم سه A .....

$\cot\alpha = \frac{\cos\alpha}{\sqrt{1-\cos^2\alpha}} = \frac{\cos\alpha}{|\sin\alpha|}$ ⇒ Cot و Cos هم علامت

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

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

$1-\sin\alpha = 1-\sin\alpha \quad 0=0$

$\cos\alpha < 0$: $-\frac{1}{\cos\alpha} - \frac{\sin\alpha}{\cos\alpha} = -\frac{1-\sin\alpha}{\cos\alpha}$

$1+\sin\alpha = 1-\sin\alpha \quad \sin\alpha = 0 \times \longrightarrow$ Cot تعریف نشود

$\Rightarrow \cos\alpha > 0 \ , \ \cot\alpha > 0 \Rightarrow$ α در ناحیه‌ی اول

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$-\frac{\pi}{12} < x < \frac{5\pi}{12} \qquad -\frac{\pi}{6} < 2x < \frac{5\pi}{6} \qquad -\frac{1}{2} < \sin 2x < 1 \qquad -\frac{1}{2} < \frac{m-1}{4} < 1$

$-2 < m-1 < 4 \qquad \boxed{-1 < m < 5}$

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$\tan x + \cot x = \frac{1}{\sin x \cdot \cos x} = -3 \qquad \sin x \times \cos x = -\frac{1}{3}$

$|\sin x + \cos x| = \sqrt{1 + 2\sin x \cdot \cos x} = \sqrt{1-\frac{2}{3}} = \frac{\sqrt{3}}{3} \qquad \frac{3}{4}\pi < x < \pi \Rightarrow |\sin x| \leq |\cos x|$

$\Rightarrow \sin x + \cos x = -\frac{\sqrt{3}}{3}$

$\frac{1}{\sin^3 x + \cos^3 x} = \frac{1}{(\sin x + \cos x)(\sin^2 x - \sin x \cdot \cos x + \cos^2 x)}$

$= \frac{1}{-\frac{\sqrt{3}}{3}\left(1+\frac{1}{3}\right)} = \frac{1}{-\frac{\sqrt{3}}{3} \times \frac{4}{3}} = -\frac{9}{4\sqrt{3}} = \boxed{-\frac{3\sqrt{3}}{4}}$

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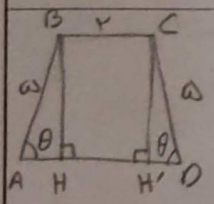

$AH = AB \cdot \cos\theta \qquad 5 \times 0.6 = 3 = AH = DH'$

$\left.\begin{array}{l} HH' = BC = 2 \\ DH' = AH = 3 \end{array}\right\} \Rightarrow AD = 8 \qquad BH = \sqrt{AB^2 - AH^2} =$

$= \sqrt{25-9} = 4 \qquad S = \frac{BH \times (AD+BC)}{2}$

$S = \frac{4 \times (8+2)}{2} = \boxed{20}$

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

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

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

$\cos(525^\circ) = \cos\left(\frac{3\pi}{2} - 15^\circ\right) = -\sin 15^\circ$

$(-\cot 15^\circ)(\tan 15^\circ) - (\sin 15^\circ)(-\sin 15^\circ) = -1 + \sin^2 15^\circ = -\cos^2 15^\circ$

$(-1)(\cos^2 15^\circ) = K\cos^2 15^\circ \qquad \boxed{K = -1}$

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

$\sin 245^\circ = \sin(\frac{5\pi}{4} - 270^\circ) = -\cos 270^\circ$

$\sin 135^\circ = \sin(\pi - 45^\circ) = +\sin 45^\circ = \frac{\sqrt{2}}{2}$

$\cos 143^\circ = \cos(\pi - 270^\circ) = -\cos 270^\circ$

$\sqrt{3}\left(-\frac{\sqrt{3}}{2}\right)(-\cos 270^\circ) - \sqrt{2}\left(\frac{\sqrt{2}}{2}\right)(-\cos 270^\circ) = \frac{3}{2}\cos 270^\circ + \cos 270^\circ$

$= \boxed{\frac{5}{2}\cos 270^\circ} \longrightarrow \boxed{\cos 270^\circ \text{ برابر } \frac{5}{2}}$

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$\cos^2 3(\frac{\pi}{24}) = \cos^2 \frac{\pi}{16} = \cos^2 15^\circ$ $\qquad \cos^2 15^\circ = \frac{1+\cos 30^\circ}{2} = \frac{1+\frac{\sqrt{3}}{2}}{2} = \frac{2+\sqrt{3}}{4}$

$\cos^2 9(\frac{\pi}{24}) = \cos^2 \frac{\pi}{8} = (\frac{\sqrt{2}}{2})^2 = \frac{2}{4}$

$\cos^2 12(\frac{\pi}{24}) = \cos^2 \frac{\pi}{6} = (\frac{1}{2})^2 = \frac{1}{4}$

$\cos^2 24(\frac{\pi}{24}) = \cos^2 \frac{2\pi}{6} = (-\frac{1}{2})^2 = \frac{1}{4}$

$f(\frac{\pi}{24}) = \cancel{16} \times \frac{2+\sqrt{3}}{4} \times \frac{2}{4} \times \cancel{\frac{1}{4}} \times \cancel{\frac{1}{4}} = \frac{9+6\sqrt{3}}{16}$

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$\frac{1-\sin x}{1+\sin x} = 4 \qquad 1-\sin x = 4+4\sin x \qquad 5\sin x = -3 \qquad \sin x = -\frac{3}{5}$

$1-\sin^2 x = \cos^2 x \qquad 1-\frac{9}{25} = \frac{16}{25} = \cos^2 x \qquad \cos x = -\frac{4}{5}$

$\tan\frac{x}{2} = \frac{\sin x}{1+\cos x} = \frac{-\frac{3}{5}}{1-\frac{4}{5}} = -\frac{\frac{3}{5}}{\frac{1}{5}} = -3$

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

$\frac{\sin\theta}{1-\cos\theta} = \frac{1}{\tan\frac{\theta}{2}} = \cot\frac{\theta}{2} \qquad \cot\frac{\theta}{2} + \cot\frac{\theta}{2} = 2\cot\frac{\theta}{2} = k\cot\frac{\theta}{2} \quad \boxed{k=2}$

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$\cos(\frac{11\pi}{6} + \alpha) = \cos(\frac{5\pi}{6} + \alpha) = \cos\frac{5\pi}{6}\cdot\cos\alpha - \sin\frac{5\pi}{6}\cdot\sin\alpha$

$\cos\alpha = -\sqrt{1-\sin^2\alpha} = -\sqrt{1-0.02} = -\sqrt{0.98} = -\frac{7\sqrt{2}}{10}$

$-\frac{\sqrt{3}}{2}\times\left(-\frac{7\sqrt{2}}{10}\right) - \left(-\frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{10}\right) = \frac{7}{10} + \frac{1}{10} = 0.8$

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