نام و نام خانوادگی [illegible] پاسخنامه تشریحی تکلیف شماره ۲۸ کلاس یازدهم [illegible] B

ناحیه ۱ یا ۲

$\cot\alpha = \dfrac{\cos\alpha}{\sqrt{1-\cos^2\alpha}} = \dfrac{\cos\alpha}{|\sin\alpha|} \qquad |\sin\alpha| = \sin\alpha \longrightarrow \sin\alpha > 0$

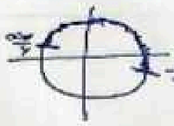
$\dfrac{1}{\sqrt{\cos^2\alpha}} - \dfrac{1}{\cot\alpha} = \dfrac{1-\sin\alpha}{|\cos\alpha|} \Longrightarrow \dfrac{1}{|\cos\alpha|} - \dfrac{1}{\cot\alpha} = \dfrac{1}{|\cos\alpha|} - \dfrac{\sin\alpha}{\cos\alpha} \qquad |\cos\alpha| = \cos\alpha$ ۱

$\cos\alpha > 0$

ناحیه ۱ یا ۴

اشتراک‌ها ناحیه ① است

$-\dfrac{\pi}{12} < x < \dfrac{5\pi}{12} \longrightarrow -\dfrac{\pi}{6} < 2x < \dfrac{5\pi}{6}$



$-\dfrac{1}{2} < \sin 2x \leqslant 1$

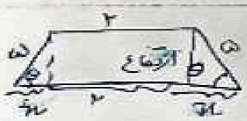
$-\dfrac{1}{2} < \dfrac{m-1}{4} \leqslant 1 \qquad -2 < m-1 \leqslant 4 \qquad -1 < m \leqslant 5$ ۲

$m \in (-1, 5]$

$\tan x + \cot x = \dfrac{2}{\sin 2x} = -3 \qquad \sin 2x = -\dfrac{2}{3} = 2\sin x\cos x \qquad \sin x\cos x = -\dfrac{1}{3}$

$\dfrac{1}{\sin^3 x + \cos^3 x} = \dfrac{1}{\underbrace{(\sin x+\cos x)}\underbrace{(\sin^2 x+\cos^2 x - \sin x\cos x)}_{1+\frac{1}{3}}} = \dfrac{1}{-\frac{\sqrt{3}}{3} \times \frac{4}{3}} = \dfrac{1}{\frac{-4\sqrt{3}}{9}} = \boxed{\dfrac{-9}{4\sqrt{3}}}$ ۳

$(\sin x+\cos x)^2 = \sin^2 x+\cos^2 x + 2\sin x\cos x = 1 - \dfrac{2}{3} = \dfrac{1}{3} \qquad \sin x + \cos x \xrightarrow{\frac{3\pi}{4}<x<\pi} -\dfrac{\sqrt{3}}{3}$



$\cos\theta = 0/6$

$= x = 3$

طول قاعده بزرگ $= 2 + 2(3) = 8$

ارتفاع $= \sqrt{25-9} = 4$ ۴

مساحت ذوزنقه $= \dfrac{\text{ارتفاع} \times \text{مجموع قاعده‌ها}}{2} = \dfrac{(2+8)\times 4}{2} = 20$

$\tan(285^\circ)\tan(-165^\circ) - \sin(1095^\circ)\cos(255^\circ) =$

$\tan(\frac{3\pi}{2}+15^\circ)\tan(-\pi+15^\circ) - \sin(6\pi+15^\circ)\cos(\frac{3\pi}{2}-15^\circ)$

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

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

$A = \sqrt{3}\cos(210^\circ)\sin(243^\circ) - \sqrt{3}\sin(120^\circ)\cos(153^\circ)$

$\sqrt{3} \times \left(-\frac{\sqrt{3}}{2}\right)\left(\sin\left(\frac{3\pi}{2} - 27^\circ\right)\right) - \left(\sqrt{3} \times \left(\frac{\sqrt{3}}{2}\right)\right)\left(\cos(\pi - 27^\circ)\right) =$

$-\frac{3}{2} \times -\cos 27^\circ + \cos 27^\circ = \cos 27^\circ\left(\frac{3}{2} + 1\right) = \frac{5}{2}\cos 27^\circ$ ۶

$\frac{5/2 \cos 27^\circ}{\cos 27^\circ} = \boxed{\frac{5}{2}}$

$f(x) = 16\cos^2(2x)\cos^2(4x)\cos^2(8x)\cos^2(16x)$

$f\left(\frac{\pi}{24}\right) = 16\left(\cos^2\frac{\pi}{12}\cos^2\frac{\pi}{6}\cos^2\frac{\pi}{3}\cos^2\frac{2\pi}{3}\right) = \cancel{16} \times \frac{2+\sqrt{3}}{\cancel{4}} \times \frac{3}{\cancel{4}} \times \frac{1}{4} \times \frac{1}{4} = \boxed{\frac{6+3\sqrt{3}}{16}}$ ۷

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

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x ربع سوم

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

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

$\boxed{\cos x = -\frac{4}{5}}$ ۸

$\tan^2\frac{x}{2} = \frac{1-\cos x}{1+\cos x} = \frac{\frac{9}{5}}{\frac{1}{5}} = 9 \qquad \boxed{\tan\frac{x}{2} = -3}$

x ربع ۳ $\Rightarrow \frac{x}{2}$ ربع ۲

$\frac{\sin\theta}{1-\cos\theta} + \frac{1+\cos\theta}{\sin\theta} = \frac{\cancel{2\sin\frac{\theta}{2}}\cos\frac{\theta}{2}}{\cancel{2\sin^2\frac{\theta}{2}}} + \frac{\cancel{2\cos^2\frac{\theta}{2}}}{\cancel{2\sin\frac{\theta}{2}\cos\frac{\theta}{2}}} = \cot\frac{\theta}{2} + \cot\frac{\theta}{2} = 2\cot\frac{\theta}{2}$

$\boxed{k = 2}$ ۹

α ربع دوم $\qquad \sin\alpha = \frac{\sqrt{2}}{10}$

$\cos\alpha = -\frac{7\sqrt{2}}{10}$

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

$\cancel{\frac{8\pi}{4}} + \frac{3\pi}{4}$

$\left(-\frac{\sqrt{2}}{2} \times -\frac{7\sqrt{2}}{10}\right) - \left(\frac{\sqrt{2}}{10} \times \frac{\sqrt{2}}{2}\right) = \frac{7}{10} - \frac{1}{10} = \frac{6}{10}$