علی جمالی   یازدهم تیپ A

-۱

$\sin, \cos > 0 \Rightarrow$ ناحیه اول

$\frac{\cos\alpha}{\sin\alpha} = \cot\alpha = \frac{\cos\alpha}{\sqrt{1-\cos^2\alpha}} = \frac{\cos\alpha}{|\sin\alpha|}$ ($\sin^2\alpha$)

$\Rightarrow \sin\alpha \geq 0$

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

$E = \frac{\cos\alpha}{|\cos\alpha|} \Rightarrow E - \sin\alpha = E - E\sin\alpha$

$\Rightarrow E = 1 \Rightarrow \cos\alpha \geq 0$

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$-\frac{\pi}{12} < x < \frac{5\pi}{12}$

$-\frac{\pi}{6} < 2x < \frac{5\pi}{6}$

$-\frac{1}{2} < \sin 2x \leq 1$

$\Rightarrow -\frac{1}{2} < \frac{m-1}{4} \leq 1 \Rightarrow$

$-1 < m \leq 5$ $\quad m \in (-1, 5]$

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

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

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

$3\pi < 4x < 4\pi$

$\frac{3\pi}{4} < x < \pi$

$\Downarrow$

$\sin + \cos < 0$

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

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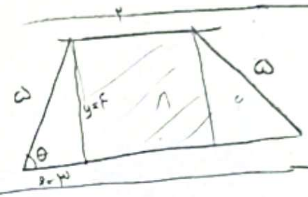
$x = 5 \times \cos\theta = 3$

$y = 5 \times \sin\theta = 4$



$S = 2\times4 + \frac{3\times4}{2}\times2 = \boxed{20}$

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

$\Rightarrow \boxed{K=-1}$

-۶ $\boxed{\frac{5}{2}}$

$\sqrt{3}\cdot\frac{-\sqrt{3}}{2}\cdot(-\cos 27) - \sqrt{2}\cdot\frac{\sqrt{2}}{2}\cdot(-\cos 27) = (\frac{3}{2}+1)(\cos 27)$

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$f(x) = \frac{\cos^2(48x)}{\sin^2(3x)}$ $\quad f(\frac{\pi}{36}) = \frac{\cos^2(\frac{4\pi}{3})}{\sin^2(\frac{\pi}{12})} = \frac{\frac{1}{4}}{\frac{2-\sqrt{3}}{4}} = \frac{1}{2-\sqrt{3}} = \boxed{2+\sqrt{3}}$

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

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$1 - \sin x = 4 + 4\sin x$

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

$\cos x < 0 \Rightarrow \cos x = -\frac{4}{5}$ $\quad \frac{9}{25} + \cos^2 x = 1$

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

$\frac{\sin x}{1+\cos x} = \frac{2\sin\frac{x}{2}\cos\frac{x}{2}}{2\cos^2\frac{x}{2}} = \tan\frac{x}{2}$

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$\frac{\sin x}{1+\cos x} = \tan\frac{x}{2}$

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

$2\cot\frac{x}{2} + 2\cot\frac{x}{2} = 4\cot\frac{x}{2} \Rightarrow \underline{K=4}$

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$\cos(\frac{11\pi}{4}+\alpha) = \cos(\frac{3\pi}{4}+\alpha) = \cos\frac{3\pi}{4}\cos\alpha - \sin\frac{3\pi}{4}\sin\alpha = \frac{\sqrt{2}}{2}(-\cos\alpha - \sin\alpha)$

$\sin\alpha = \frac{\sqrt{2}}{10}$ $\quad \frac{2}{100} + \cos^2\alpha = 1 \Rightarrow \cos\alpha = \pm\frac{7\sqrt{2}}{10}$

$\Rightarrow \cos\alpha < 0$

$\frac{\sqrt{2}}{2}(-\cos\alpha - \sin\alpha) = \frac{\sqrt{2}}{2}(\frac{7\sqrt{2}}{2} - \frac{\sqrt{2}}{2}) =$

$\frac{\sqrt{2}}{2}(\frac{6\sqrt{2}}{2}) = \boxed{3}$

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