دیانا اسعیار — ①

$\frac{1}{\sqrt{\cos^2\alpha}} - \frac{1}{\cot\alpha} = \frac{1-\sin\alpha}{|\cos\alpha|} \to \cos\alpha < 0$

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

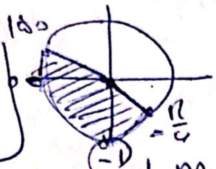
$\cot\alpha = \frac{\cos\alpha}{\sqrt{1-\cos^2\alpha}} = \frac{\cos\alpha}{|\sin\alpha|} = \frac{\cos\alpha}{\sin\alpha} \to \sin\alpha > 0$

انتهای کمان ربع دوم!

۲-

$\sin 2x = \frac{m-1}{4}$

$-\frac{7\pi}{12} < x < \frac{5\pi}{12} \xrightarrow{\times 2} -\frac{7\pi}{6} < 2x < \frac{5\pi}{6}$



$-1 \leq \sin 2x < 0 \to -1 \leq \frac{m-1}{4} \leq 0 \to -4 \leq m-1 \leq 0 \to -3 \leq m \leq 1$

مجموع مقادیر

$m = ?$

۳- ①

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

$\frac{1}{\cos^3 x + \sin^3 x} = ?$

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

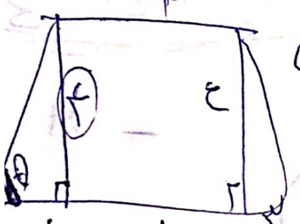
$\frac{3}{4}\pi < x < \pi$

$\sin\alpha \cdot \cos\alpha = -\frac{1}{3}$

$-\frac{3\sqrt{3}}{4}$

$(\cos x + \sin x)(\cos^2 x + \sin^2 x - (\cos \cdot \sin x))$

۴-



$\cos\theta = 0/6$

مساحت

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

$-12 + 4 = 8$

۵-

$\tan(285°) \times \tan(-165°) - \sin(1095°)\cos(255°) = K\cos^2 15$

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

$-\tan 15 \times -\tan 15 \qquad + \sin 15 \times + \sin 15$

$\sin^2 15(1 + \cos^2 15) = \frac{\sin^2 15}{\cos^2 15} + \frac{\sin^2 15 \cdot \cos^2 15}{\cos^2 15}$

$K = 1$

$$A = \frac{\sqrt{3}\cos(210^\circ)\sin(240^\circ) - \sqrt{2}\sin(135^\circ)\cos(135^\circ)}{\frac{1}{2}\cos(45^\circ) + \frac{1}{2}\times\frac{\sqrt{2}}{2}\times\cos(90^\circ)}$$

$$\frac{A}{\cos 45^\circ} = ?$$

$$\frac{1}{2}\cos 45^\circ \Rightarrow \frac{\cos 45^\circ}{2}$$

$$f(x) = 14\cos^2(3x)\cos^2(5x)\cos^2(12x)\cos^2(24x) - 1$$

$$f\left(\frac{\pi}{24}\right) = 14\cos^2\left(\frac{\pi}{8}\right)\cos^2\left(\frac{\pi}{12}\right)\cos^2\left(\frac{\pi}{3}\right)\cos^2\left(\frac{3}{8}\pi\right)$$

$$\times \frac{2-\sqrt{3}}{4} \quad \times \frac{3}{4}\times\frac{1}{4}\times\frac{1}{4} = \frac{9-3\sqrt{3}}{16}$$

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

$$-3 = 5\sin\theta \rightarrow \sin\theta = -\frac{3}{5} \rightarrow \tan(\theta) = \frac{3}{4}$$

$$\cos\theta = -\frac{4}{5}$$

$$\tan\frac{x}{2} = ? \rightarrow \tan\theta = \frac{2\tan\frac{\theta}{2}}{1-\tan^2\frac{\theta}{2}} \Rightarrow \frac{3}{4} = \frac{2\tan\frac{\theta}{2}}{1-\tan^2\frac{\theta}{2}} \rightarrow \tan\left(\frac{\theta}{2}\right) = \frac{1}{3}$$

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

$$\frac{\sin^2\theta + 1 - \cos^2\theta}{(\sin\theta)(1-\cos\theta)} = K\cot\left(\frac{\theta}{2}\right)$$

$$K = 2$$

$$\cos\alpha = \sqrt{1-\frac{1}{100}} = \frac{\sqrt{99}}{10} \Rightarrow \text{منفی} \quad -\frac{9}{10}$$

$$\sin\alpha = \frac{\sqrt{1}}{10} \rightarrow \sin^2\alpha + \cos^2\alpha = 1$$

$$\hookrightarrow \frac{1}{100} + \cos^2\alpha = 1 \rightarrow \cos^2\alpha = \frac{99}{100}$$

$$-\sqrt{\sqrt{11}}$$

$$\cos\left(\frac{11\pi}{4} + \alpha\right) \Rightarrow \cos\left(\alpha + \frac{3\pi}{4}\right) \rightarrow \cos\alpha\cdot\cos\frac{3\pi}{4} - \sin\alpha\cdot\sin\frac{3\pi}{4}$$

$$\frac{1}{10} \leftarrow \frac{1}{10} \quad \frac{9}{10} \leftarrow \frac{\sqrt{2}}{2}\cdot\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}\cdot\frac{\sqrt{2}}{2}$$