

$$\sin\left(x + \frac{\pi}{4}\right) \cos\left(x - \frac{\pi}{4}\right) = 1 \quad \sin A \cos B = \frac{1}{2} [\sin(A+B) + \sin(A-B)]$$

$$= \frac{1}{2} \left[\sin\left(2x - \frac{\pi}{4}\right) + \sin\left(\frac{\pi}{2}\right) \right] = 1$$

$$\Rightarrow \sin\left(2x - \frac{\pi}{4}\right) + 1 = 2 \Rightarrow \sin\left(2x - \frac{\pi}{4}\right) = 1 \rightarrow 2k\pi + \frac{\pi}{4} = 2x - \frac{\pi}{4}$$

$$\rightarrow 2x = 2k\pi + \frac{\pi}{2} + \frac{\pi}{4} = 2k\pi + \frac{3\pi}{4} \rightarrow x = k\pi + \frac{3\pi}{8} \quad \begin{matrix} K=0 \rightarrow x = \frac{3\pi}{8} \\ K=1 \rightarrow x = \frac{11\pi}{8} \end{matrix}$$

$$1 \sin x + \sqrt{3} \cos x = \sqrt{4} \rightarrow \frac{b}{a} = \sqrt{3} \rightarrow \alpha = \tan^{-1}(\sqrt{3}) = \frac{\pi}{3}$$

$$a \sin x + b \cos x = \frac{a}{|a|} \sqrt{a^2 + b^2} \sin(x + \alpha), \tan \alpha = \frac{b}{a}$$

$$\rightarrow \sin x + \sqrt{3} \cos x = \sqrt{1+3} \sin\left(x + \frac{\pi}{3}\right) = 2 \rightarrow \sin\left(x + \frac{\pi}{3}\right) = \frac{2}{2} = 1$$

$$\rightarrow \begin{cases} x + \frac{\pi}{3} = 2k\pi + \frac{\pi}{2} \rightarrow x = 2k\pi - \frac{\pi}{6} & \xrightarrow{K=0,1} x = -\frac{\pi}{6}, \frac{11\pi}{6} \\ x + \frac{\pi}{3} = 2k\pi + \frac{5\pi}{2} \rightarrow x = 2k\pi + \frac{13\pi}{6} & \xrightarrow{K=0} x = \frac{13\pi}{6} \end{cases} \Rightarrow \sum x = \frac{19\pi}{6} = \frac{19\pi}{6}$$

$$\sqrt{5} \sin x \sin\left(\frac{5\pi}{6} - x\right) = 1 \rightarrow -\sqrt{5} \sin x \cos x = 1 \rightarrow \sqrt{5} \sin 2x = -1 \rightarrow \sin 2x = -\frac{1}{\sqrt{5}}$$

$$\Rightarrow \begin{cases} 2x = 2k\pi + \frac{7\pi}{6} \rightarrow x = k\pi + \frac{7\pi}{12} & \xrightarrow{[0, 2\pi]} K=0,1 \begin{cases} x = \frac{7\pi}{12} \\ x = \frac{19\pi}{12} \end{cases} \\ 2x = 2k\pi + \frac{11\pi}{6} \rightarrow x = k\pi + \frac{11\pi}{12} & \xrightarrow{K=0,1} \begin{cases} x = \frac{11\pi}{12} \\ x = \frac{23\pi}{12} \end{cases} \end{cases} \Rightarrow \sum x = \frac{40\pi}{12} = \frac{10\pi}{3}$$

$$\frac{(1 + \cos 2x)}{2 \cos^2 x} \cdot \frac{(1 + \cos 2\alpha)}{2 \cos^2 \alpha} \cdot \frac{(1 + \cos 2\beta)}{2 \cos^2 \beta} = \frac{1}{8} \Rightarrow \cos^2 x \cos^2 \alpha \cos^2 \beta = \frac{1}{8}$$

$$\cos \alpha = \frac{1}{2} \rightarrow \frac{1}{2} \times \left(\frac{1}{2}\right) \left(\frac{1}{2}\right) = \frac{1}{8} \checkmark \rightarrow \cos \alpha = \frac{1}{2} \rightarrow \alpha = \frac{\pi}{3}$$

$$\cos 2\alpha = 2 \cos^2 \alpha - 1 = -\frac{1}{2}$$

$$\cos 2\alpha = 2 \cos^2 \alpha - 1 = -\frac{1}{2}$$

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

$$\cos 2\alpha = \cos \frac{4\pi}{3} = -\frac{1}{2} \Rightarrow \left(\frac{1}{2}\right) \left(\frac{1}{2}\right) \left(\frac{1}{2}\right) = \frac{1}{8} \checkmark$$

$$\cos 2\alpha = \cos \frac{8\pi}{3} = -\frac{1}{2}$$

سب سے بڑا جواب ہمارا $[0, 2\pi]$

$$A = \left\{ \frac{\pi}{3}, \frac{2\pi}{3} \right\}$$

$$A_{\max} = \frac{5\pi}{6}$$

$$\tan 2x \tan x = 1 \rightarrow \tan 2x = \frac{1}{\tan x} = \cot x = \tan\left(\frac{\pi}{2} - x\right) \rightarrow \tan 2x = \tan\left(\frac{\pi}{2} - x\right)$$

$$\rightarrow 2x = k\pi + \frac{\pi}{2} - x \rightarrow 3x = k\pi + \frac{\pi}{2} \rightarrow x = \frac{k\pi}{3} + \frac{\pi}{6} \quad \xrightarrow{[0, 2\pi]} K=1, 2, 3, 4$$

$$\rightarrow \begin{cases} x = \pi + \frac{\pi}{6} \\ x = \frac{5\pi}{6} + \frac{\pi}{6} \\ x = \frac{4\pi}{3} + \frac{\pi}{6} \\ x = \frac{3\pi}{2} + \frac{\pi}{6} \end{cases} \Rightarrow \sum x = \frac{\pi}{6} + \frac{12\pi}{6} = \frac{13\pi}{6} = \frac{13\pi}{6}$$

$$C.S \propto C.S \propto C.S \propto \pm \frac{1}{\lambda} \frac{\lambda \sin \alpha}{\sin \alpha \neq 0}$$

$$\rightarrow \sin \Lambda \alpha = \pm \sin \alpha$$

$$\rightarrow \Lambda \alpha = \gamma \mu \Gamma + \alpha$$

$$\Lambda \alpha = \gamma \mu \Gamma_1 + \Gamma_1 - \alpha$$

$$\Lambda \alpha = \gamma \mu \Gamma - \alpha$$

$$\Lambda \alpha = \gamma \mu \Gamma + \Gamma + \alpha$$

$$\alpha = \frac{\gamma \mu \Gamma}{\sqrt{}} \rightarrow \mu = \gamma \quad \eta = \frac{d\Gamma}{\sqrt{}}$$

$$\alpha = \frac{\gamma \mu \Gamma}{a} = \mu = \gamma \quad \eta = \frac{\Lambda \Gamma}{a} \rightarrow \text{mag } A$$

$$\alpha = \frac{\gamma \mu \Gamma + \Gamma}{\sqrt{}} = \mu = \gamma \quad \eta = \frac{D\Gamma}{\sqrt{}}$$

$$\alpha = \frac{\gamma \mu \Gamma + \Gamma}{a} = \mu = \gamma \rightarrow \eta = \frac{\gamma \Gamma}{a}$$