

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

$$\frac{\cos \alpha}{\sin \alpha} \cdot \frac{1}{|\cos \alpha|} = \frac{\cos \alpha}{|\sin \alpha| |\cos \alpha|} \rightarrow \sin \alpha > 0$$

→ $\cos \alpha > 0$ → نا حاد

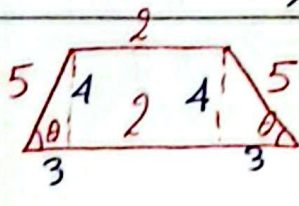
$$-\frac{\pi}{12} < x < \frac{5\pi}{12} \rightarrow -\frac{\pi}{8} < 2x < \frac{5\pi}{8} \rightarrow -\frac{1}{2} < \frac{m-1}{4} < 1$$

$$\rightarrow -2 < m-1 < 4 \rightarrow -1 < m < 5 \rightarrow \boxed{m \in \{1, 2, 3, 4\}}$$

$$\tan x + \cot x = 3 \rightarrow \sin x \cdot \cos x = \frac{1}{3} \rightarrow \sin x \cos x = \frac{\sqrt{3}}{3}$$

$$\sin^3 x + \cos^3 x = (\sin x + \cos x)(\sin^2 x + \cos^2 x - \sin x \cos x)$$

$$= \frac{4\sqrt{3}}{9} \rightarrow \frac{1}{\frac{4\sqrt{3}}{9}} = \frac{9}{4\sqrt{3}} = \frac{3\sqrt{3}}{4}$$



$$\cos \theta = 0/6 \rightarrow \sin \theta = 0/8$$

$$\rightarrow \frac{(2+8) \cdot 4}{2} = \boxed{20}$$

$$\tan(270+15) = -\tan(180-15) = -\sin(1095) \cdot \cos(255)$$

$$(-\cot(15) = \tan(15)) = (\sin(15) \cdot -\sin(15))$$

$$-1 + \sin^2 15 = -\cos^2 15 \rightarrow \boxed{K = -1}$$

$$A. \sqrt{3} \cos 270^\circ \cdot \sin(270^\circ - 27^\circ) - \sqrt{2} \sin 135^\circ \cdot \cos(180^\circ - 27^\circ)$$

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

$$\frac{3}{2} \cos 27^\circ + \cos 27^\circ = \frac{5}{2} \cos 27^\circ \rightarrow \boxed{\frac{5}{2}}$$

$$F(x) = 16 \cos^2(3x) \cdot \cos^2(6x) \cdot \cos^2(12x) \cdot \cos^2(24x)$$

$$x = \frac{\pi}{4} \rightarrow \cos 15^\circ, \cos(45^\circ - 30^\circ), \cos 45^\circ, \cos 30^\circ + \sin 45^\circ \cdot \sin 30^\circ$$

$$= \frac{\sqrt{6} + \sqrt{2}}{4} \rightarrow 16 \cos^2 15^\circ \cdot \cos^2 30^\circ \cdot \cos^2 60^\circ \cdot \cos^2 120^\circ$$

$$\rightarrow 16 \times \frac{2 + \sqrt{3}}{4} \times \frac{3}{4} \times \frac{1}{4} \times \frac{1}{4} = \frac{6 + 3\sqrt{3}}{16}$$

$$x \rightarrow 3 \text{ cu} / \frac{1 - \sin x}{1 + \sin x}, 4 \rightarrow 4 + 4 \sin x = 1 - \sin x \rightarrow$$

$$\sin x = -\frac{3}{5} \rightarrow \cos x = -\frac{4}{5} \rightarrow \tan x = \frac{3}{4}$$

$$\rightarrow \tan \frac{x}{2} = \tan\left(\frac{x - x}{2}\right) = \frac{\tan x - \tan \frac{x}{2}}{1 + \tan x \cdot \frac{x}{2}} \rightarrow \frac{3}{4} = \frac{t}{1 + 3t}$$

$$\rightarrow t = -3, \frac{1}{3} \rightarrow \boxed{-3} = \tan \frac{x}{2}$$

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

$$\rightarrow \frac{2 \sin \frac{\theta}{2} \cdot \cos \frac{\theta}{2}}{2 \sin^2 \frac{\theta}{2}} = \boxed{\cot \frac{\theta}{2}} \rightarrow \text{K} = 1$$

$$\sin 2\alpha = \frac{\sqrt{2}}{10} \rightarrow \alpha \rightarrow 2 \text{ cu} \rightarrow \cos \alpha = \sqrt{1 - \frac{2}{100}} = \frac{\sqrt{98}}{10}$$

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

$$\rightarrow \left(-\frac{\sqrt{2}}{2} \times -\frac{\sqrt{98}}{10}\right) - \left(\frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{10}\right) = \frac{14}{20} - \frac{2}{20} = \frac{12}{20} = \frac{3}{5}$$