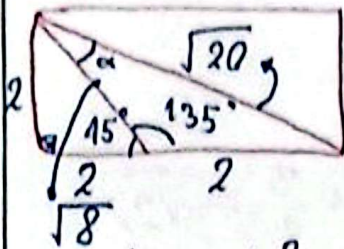


$$6 = \frac{\sqrt{3}}{\sin \alpha} \rightarrow \sin \alpha = \frac{\sqrt{3}}{6} = \frac{\sqrt{3}}{2}$$

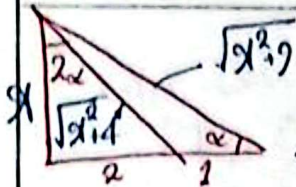
$$\sin \alpha = \frac{\sqrt{3}}{2} \rightarrow \alpha < 180^\circ \rightarrow \alpha = 60^\circ, 120^\circ$$

$$\frac{120}{60} = 2$$



$$\sin 135^\circ = \frac{2}{\sqrt{20}} \rightarrow \sin \alpha = \frac{\sqrt{2}}{\sqrt{20}} = \frac{1}{\sqrt{5}}$$

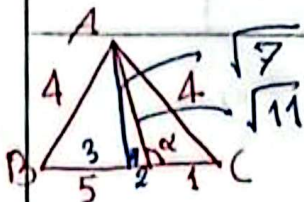
$$1 + \cot^2 \alpha = \frac{1}{\sin^2 \alpha} \rightarrow 1 + \cot^2 \alpha = \frac{20}{2} \rightarrow \cot \alpha = 3$$



$$\sin 2\alpha = \frac{2x}{\sqrt{x^2+4}} \rightarrow \sin \alpha = \frac{x}{\sqrt{x^2+4}}$$

$$2 \sin \alpha \cos \alpha = \frac{2x}{\sqrt{x^2+4}} \rightarrow \cos \alpha = \frac{3}{\sqrt{x^2+4}}$$

$$32x^4 + 72x^2 - 3240 \rightarrow x = \sqrt{15} \rightarrow \cot \alpha = \frac{3}{\sqrt{15}} = \frac{\sqrt{15}}{5}$$



$$\sin \alpha = \frac{4}{5} \rightarrow \sin \alpha = \frac{\sqrt{7}}{4} \rightarrow \sin \alpha = \frac{\sqrt{11}}{4}$$

$$\frac{\sqrt{7}}{\sqrt{11}} = \sin \alpha, \cos \alpha = \frac{2}{\sqrt{11}}$$

$$\tan \alpha = \frac{\sqrt{7}}{2}$$

$$2 \sin^2 \alpha + \cos^2 \alpha = \frac{4}{3} \rightarrow \sin^2 \alpha + 1 = \frac{4}{3} \rightarrow \sin^2 \alpha = \frac{1}{3}$$

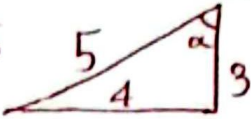
$$\cos^2 \alpha = \frac{2}{3} \rightarrow \tan^2 \alpha = \frac{\sin^2 \alpha}{\cos^2 \alpha} = \frac{1/3}{2/3} = \frac{1}{2}$$

$$\frac{\sin^4 \alpha + 4 \cos^2 \alpha}{1 + \cos^2 \alpha} - \frac{\cos^4 \alpha + 4 \sin^2 \alpha}{1 + \sin^2 \alpha} \rightarrow \frac{\sin^2 \alpha \cos^2 \alpha - 1}{\sin^4 \alpha + 1 + \cos^4 \alpha - 2 \cos^2 \alpha} - \frac{\cos^4 \alpha + 1 + \sin^4 \alpha - 2 \sin^2 \alpha}{\cos^4 \alpha + 1 + \sin^4 \alpha - 2 \sin^2 \alpha}$$

$$\rightarrow \frac{1 + \cos^4 \alpha + 2 \cos^2 \alpha}{1 + \cos^2 \alpha} - \frac{1 + \sin^4 \alpha + 2 \sin^2 \alpha}{1 + \sin^2 \alpha} = 1 + \cos^2 \alpha - (1 + \sin^2 \alpha)$$

$$\rightarrow \boxed{\cos^2 \alpha - \sin^2 \alpha}$$

$\tan \alpha = \frac{4}{3}$



$\sin \alpha = \frac{4}{5}$
 $\cos \alpha = \frac{3}{5}$
 $\cot \alpha = \frac{3}{4}$

3 no 6

$$\sin\left(\frac{\pi}{2} + \alpha\right) = \cos\left(\frac{7\pi}{2} - \alpha\right) = \tan\left(\alpha - \frac{3\pi}{2}\right)$$

$$\cos \alpha = -\sin \alpha + \cot \alpha = -\frac{3}{5} + \frac{4}{5} + \frac{3}{4} = \frac{17}{20}$$

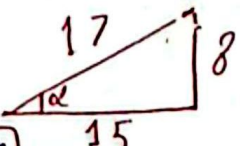
$$x = \frac{\pi}{12} = 15^\circ \rightarrow (3 \cos 60^\circ, \sqrt{2} \sin 15^\circ - \sqrt{2} \cos 15^\circ)$$

$$\frac{3}{2} + \sqrt{2} \sin(45^\circ - 30^\circ) - \sqrt{2} \cos(45^\circ - 30^\circ) = \frac{3}{2} + \sqrt{2} (\sin 45^\circ \cos 30^\circ - \sin 30^\circ \cos 45^\circ) - \sqrt{2} (\cos 45^\circ \cos 30^\circ + \sin 45^\circ \sin 30^\circ)$$

$$= \frac{3}{2} + \sqrt{2} \left(\frac{\sqrt{2}}{2} \cdot \frac{\sqrt{3}}{2} - \frac{1}{2} \cdot \frac{\sqrt{2}}{2} \right) - \sqrt{2} \left(\frac{\sqrt{2}}{2} \cdot \frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2} \cdot \frac{1}{2} \right) = -1 + \frac{3}{2} = \frac{1}{2}$$

$\tan\left(\frac{\alpha}{2}\right) = \frac{1}{4} \rightarrow \tan\left(\alpha - \frac{\alpha}{2}\right) = \frac{\tan \alpha - \tan \frac{\alpha}{2}}{1 + \tan \alpha \tan \frac{\alpha}{2}} = \frac{\tan \alpha - \frac{1}{4}}{1 + \frac{\tan \alpha}{4}}$

$\rightarrow \tan \alpha = \frac{8}{15}$



$\frac{8}{15} - \frac{8}{17} = \frac{16}{105}$

$\frac{8}{15} = \frac{8}{17} \rightarrow \frac{16}{105}$

$\sin \alpha = \frac{8}{17}$
 $\cos \alpha = \frac{15}{17}$

$\frac{\tan \alpha - \sin \alpha}{\sin \alpha - \cos \alpha}$

$$2 \sin \alpha < \sin 2\alpha, \quad 0 < \frac{\cot \alpha}{\sin \alpha} \rightarrow 0 < \frac{\cos \alpha}{\sin^2 \alpha} \rightarrow \boxed{\cos \alpha > 0}$$

$$\rightarrow \sin \alpha < \frac{\sin \alpha \cdot \cos \alpha}{\cos \alpha} \rightarrow \boxed{\sin \alpha < 0}$$

$$\rightarrow \boxed{4 \text{ no } 6}$$