

مسئله 15

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$$S_2 = A \left(\frac{2gh}{P} \right) = \frac{2}{P} \frac{2gh}{P} = \frac{4gh}{P^2}$$

(1)

$$A = \frac{2}{P}$$

$$gh = \tan^2\left(\frac{\alpha}{2}\right) = 1$$

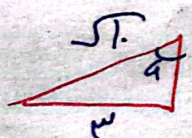
$$\Delta = \sin^2 \alpha \cos^2 \alpha \Rightarrow \frac{\sin^2 \alpha}{P} > \frac{P}{P} \Rightarrow \sin^2 \alpha > \frac{1}{P} = \frac{1}{4} \Rightarrow \sin \alpha > \frac{1}{2}$$

(1)

$$\Rightarrow \log \tan^2 \alpha = \frac{1}{\cos^2 \alpha} \Rightarrow \frac{1}{\left(\frac{1}{\sin^2 \alpha}\right)^2} = \frac{9}{1}$$

$$\log \sin \alpha - \log (\cos \alpha) = \log \frac{\sin \alpha}{\cos \alpha} = \log \tan \alpha \Rightarrow \log^2 \alpha \Rightarrow \tan^2 \alpha = P \Rightarrow \frac{\sin^2 \alpha}{\cos^2 \alpha} = P$$

(1)



$$\Rightarrow \sin \alpha = \frac{P}{\sqrt{P^2 + 1}} \Rightarrow \sin \alpha = \frac{P}{\sqrt{P^2 + 1}}$$

$$\sin^2 \alpha \cos^2 \alpha = \frac{(1 - \cos^2 \alpha)^2}{P^2} = \frac{1 - \cos^2 \alpha}{P} \Rightarrow \cos^2 \alpha \sin^2 \alpha = \frac{1 - \cos^2 \alpha}{P}$$

(1)

$$\Rightarrow \sin^2 \alpha \cos^2 \alpha = \cos^2 \alpha \sin^2 \alpha \Rightarrow \cos^2 \alpha \sin^2 \alpha = \frac{1}{P}$$

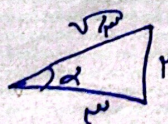
$$\sin^2 \alpha \tan^2 \alpha = \frac{1}{\cos^2 \alpha} \Rightarrow \frac{\sin^2 \alpha}{\cos^2 \alpha} > 0 \Rightarrow \frac{\sin^2 \alpha}{\cos^2 \alpha} > 0 \Rightarrow \cos^2 \alpha > 0$$

(0)

$$P \sin^2 \alpha + \frac{1}{P} \sin^2 \alpha > 0 \Rightarrow \sin^2 \alpha > 0 \Rightarrow \sin \alpha > 0$$

$$P \cos \alpha + P \sin \alpha > 0 \Rightarrow P \cos \alpha - P \sin \alpha \Rightarrow \tan \alpha < 1 \Rightarrow \frac{P}{P} < \frac{P}{P} \Rightarrow \frac{1}{P} < \frac{1}{P}$$

(4)



$$\sin \theta = \cos \phi \Rightarrow \sin^2 \theta = \frac{1 - \cos^2 \phi}{1} \Rightarrow 1 - \cos^2 \phi = \sin^2 \theta$$

$$\Rightarrow \sqrt{1 - \cos^2 \phi} = \sqrt{1} \cos \phi$$

$$\sin \theta = \cos \phi \Rightarrow \cos \theta = \sin \phi \Rightarrow \frac{\sqrt{1 - \cos^2 \phi}}{\cos \phi} = \sqrt{1}$$

$$\frac{1}{\cos \theta} = \frac{1}{\cos \phi} \Rightarrow \frac{1}{\cos \theta} = \frac{1}{\cos \phi} \Rightarrow \frac{1}{\cos \theta} = \frac{1}{\cos \phi}$$

$$\Rightarrow \cos \theta = \cos \phi \Rightarrow \frac{1}{\cos \theta} = \frac{1}{\cos \phi}$$

$$\sin \theta = \cos \phi \Rightarrow \frac{1}{\cos \theta} = \frac{1}{\cos \phi} \Rightarrow \frac{1}{\cos \theta} = \frac{1}{\cos \phi}$$

$$\cos \theta = \sin \phi \Rightarrow \cos \theta = \sin \phi \Rightarrow \cos \theta = \sin \phi$$

$$\sin B \sin C = \frac{1}{2} \sin A \sin C \Rightarrow \sin B = \frac{1}{2} \sin A$$