

$$B \mid^{\circ} \tan(-2(\circ) + \frac{\pi}{4}) = 1$$

$$T = \frac{\pi}{|1-2|} \Rightarrow T = \frac{\pi}{1}$$

$$S_{ABC} = \frac{1}{2} \times 1 \times \frac{\frac{\pi}{4}}{\frac{\pi}{4}} = \frac{\pi}{4}$$

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$$\frac{4}{9} - \frac{1}{3} \sin \alpha - \frac{1}{4} \cos^2 \alpha = 0$$

$$(3 \sin \alpha + 1)(3 \sin \alpha - 9) = 0$$

$$\sin \alpha = \frac{1}{3} \checkmark \quad \sin \alpha = 3 \quad \text{غیرممکن}$$

$$14 - 24 \sin \alpha - 9 \frac{\cos^2 \alpha}{1 - \sin^2 \alpha} = 0$$

$$\Rightarrow |\tan \alpha| = \frac{1}{2\sqrt{2}}$$

$$9 \sin^2 \alpha - 24 \sin \alpha - 9 = 0$$

$$1 + \tan^2 \alpha = \frac{9}{8}$$

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$\alpha < \frac{\pi}{2}$ (در ربع دوم رادینده میانی است)

برای اینکه $\log$ تعریف شود باید $\begin{cases} \sin \alpha > 0 \\ -\cos \alpha > 0 \end{cases}$

$$\log(\sin \alpha) - \log(-\cos \alpha) = \log \frac{\sin \alpha}{-\cos \alpha} = \log -\tan \alpha = \mu \Rightarrow \tan \alpha = -\mu$$



$$\sin \alpha = \frac{\mu}{\sqrt{10}} \quad \cos \alpha = -\frac{1}{\sqrt{10}} \quad \sin \alpha - \cos \alpha = \frac{\mu}{\sqrt{10}} + \frac{1}{\sqrt{10}}$$

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$$\sin^4 \theta + \cos^4 \theta = \sin^4 \theta + 1 - \sin^2 \theta = \sin^2 \theta (\sin^2 \theta - 1) + 1 = 1 + \cos^2 \theta \cdot \sin^2 \theta$$

$$\Rightarrow 1 + \cos^2 \theta \cdot \sin^2 \theta = \frac{4}{5} \quad (1)$$

$$\cos^4 \theta + \sin^4 \theta = \cos^4 \theta + 1 - \cos^2 \theta = \cos^2 \theta (1 - \cos^2 \theta) + 1 =$$

$$\Rightarrow 1 + \sin^2 \theta \cdot \cos^2 \theta \xrightarrow{(1)} \cos^4 \theta + \sin^4 \theta = \frac{4}{5}$$

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$$\frac{3 \sin \alpha + \sin \alpha \cos \alpha}{2 - 2 \cos^2 \alpha} = \frac{3 + \cos \alpha}{2 \sin \alpha} \quad \left\{ \begin{array}{l} 3 + \cos \alpha \text{ همواره بزرگتر از صفر است} \\ \sin \alpha < 0 \end{array} \right.$$

$$\sin \alpha \cdot \frac{\sin \alpha}{\cos \alpha} - \frac{1}{\cos \alpha} = \frac{-\cos^2 \alpha}{\cos \alpha} = -\cos \alpha > 0 \Rightarrow \cos \alpha < 0$$

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$$\frac{p}{\sin \alpha} + \frac{p}{\cos \alpha} = 0 \Rightarrow p \cos \alpha + p \sin \alpha = 0 \xrightarrow{\div \cos \alpha} 1 + p \tan \alpha = 0$$

$$\tan \alpha = -\frac{p}{p} \Rightarrow \cot \alpha = -\frac{p}{p} \Rightarrow \tan \alpha + \cot \alpha = -\frac{1p}{p}$$

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$$\frac{\sqrt{1+\sin \alpha}}{\sin \alpha + \sin \beta} = \frac{\sqrt{1+\cos \beta}}{\sin \alpha + \sin \beta} = \frac{\sqrt{1+\cos^2 \beta}}{\sin \alpha + \sin \beta} = \frac{\cos \beta \cdot \sqrt{p}}{\sin \alpha + \sin \beta}$$

$$(\because \sin p + \sin q = 2 \sin \left(\frac{p+q}{2} \right) \cdot \cos \left(\frac{p-q}{2} \right)) \Rightarrow \sin \alpha + \sin \beta = 2 \sin \frac{p}{2} \cdot \cos \frac{p}{2} \Rightarrow \frac{\cos \beta \cdot \sqrt{p}}{2 \sin \frac{p}{2} \cdot \cos \frac{p}{2}} = \frac{\cos \beta \cdot \sqrt{p}}{2 \cos \frac{p}{2}} = \sqrt{p}$$

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$$1 - p \sin^2 \alpha = \cos \beta$$

$$p \cos^2 \beta = 1 - \cos \beta$$

$$\frac{1 - \tan^2 \beta}{1 + \tan^2 \beta} = \cos \beta$$

$$\cos \beta \times \cos \beta \times \cos \beta = \frac{1}{\lambda} \times \frac{\sin \beta}{\sin \beta} \times \cos \beta \times \cos \beta \times \cos \beta$$

$$= \frac{1}{\lambda} \times \frac{\sin \beta}{\sin \beta} = \frac{1}{\lambda} \times \frac{\cos \beta}{\sin \beta} = \frac{1}{\lambda} \cot \beta$$

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$$\cos^2 \frac{A}{p} = \frac{1 + \cos A}{p} = \sin B \cdot \sin C \Rightarrow 1 + \cos A = p \sin B \cdot \sin C$$

$$1 + \cos (\pi - (B+C)) = p \sin B \cdot \sin C \Rightarrow 1 - \cos B \cdot \cos C + \sin B \cdot \sin C = p \sin B \cdot \sin C$$

$$1 - \cos B \cdot \cos C + \sin B \cdot \sin C = \cos (B-C) \Rightarrow B-C = 0 \Rightarrow C = 90^\circ \Rightarrow A = 90^\circ$$