

$$S_{\Delta} = \frac{1}{2} absin\alpha$$

$$x/y = \frac{1}{x} \times \sqrt{xy} \times \frac{y}{x} \sin\alpha$$

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$$\sin\alpha = \frac{x/y}{\sqrt{xy}} = \frac{y}{\sqrt{xy} \times \sqrt{xy}} = \frac{\sqrt{xy}}{y \times y} = \frac{\sqrt{xy}}{y}$$

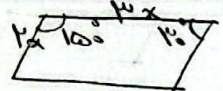
ابتدا یک مثلث فرض می‌کنیم:

حال می‌خواهیم بدانیم زاویه‌ها ۹۰ و ۱۲۰ و ۳۰

$$\frac{\pi}{3} \quad \frac{2\pi}{3}$$

در جواب: $\frac{Max}{Min} = \frac{120}{90} = \frac{4}{3}$

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$$S_{\square} = absin\alpha$$

$$\omega x = x \times x \times \frac{1}{2} \sin 120^\circ$$

$$\omega x = x^2$$

$$x^2 = 12$$

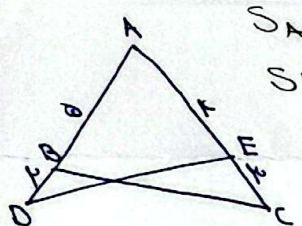
$$x = \sqrt{12} = 2\sqrt{3}$$

ابتدا یک مربع فرض می‌کنیم:

$$P_{\square} = x + x = 10x$$

$$= 10 \times 2\sqrt{3} = 20\sqrt{3}$$

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$$S_{ABC} = \frac{1}{2} \times \omega \times \sqrt{y} \times \sin A = \frac{\sqrt{y}\omega}{2} \sin A$$

$$S_{ADE} = \frac{1}{2} \times \sqrt{y} \times \frac{\omega}{2} \times \sin A = \frac{\omega \sqrt{y}}{4} \sin A$$

$$S_{ABC} - S_{ADE} = \frac{\sqrt{y}\omega}{2} \sin A - \frac{\omega \sqrt{y}}{4} \sin A = \frac{\omega \sqrt{y}}{4} \sin A$$

$$\frac{1}{2} \times \frac{\omega}{2} = \frac{\omega}{4}$$

$$\frac{1}{2} \times \frac{\omega}{2} = \frac{\omega}{4}$$

$$\sin A = \frac{\frac{\omega}{4}}{\frac{\omega}{4}} = 1$$

$$\sin^2 A + \cos^2 A = 1$$

$$\frac{1}{4} + \cos^2 A = 1$$

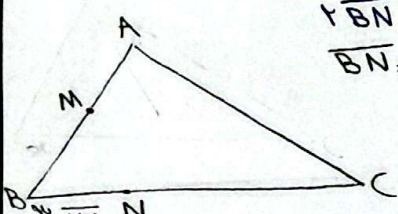
$$\cos^2 A = \frac{3}{4}$$

$$\cos A = \frac{\sqrt{3}}{2}$$

$$\tan A = \frac{\sin A}{\cos A} = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{1}{\sqrt{3}}$$

$$\frac{1}{\sqrt{3}} = \frac{1 \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}} = \frac{\sqrt{3}}{3}$$

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$$\overline{BN} = \frac{1}{2} \overline{NC}$$

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$$S_{ABC} = \frac{1}{2} \times AB \times BC \times \sin B$$

$$S_{BMN} = \frac{1}{2} \times BM \times NC \times \sin B$$

$$\frac{\frac{1}{2} \times AB \times \frac{1}{3} \overline{NC} \times \sin B}{\frac{1}{2} \times BM \times \frac{1}{3} \overline{NC} \times \sin B} = \frac{1}{3}$$

$$\frac{BM}{AM} = \frac{BM}{BM} = \frac{1}{1}$$

$$\frac{AB}{BM} \times \frac{1}{3} \times \frac{1}{3} = \frac{1}{3}$$

$$\frac{AB}{BM} = \frac{1}{3} \times \frac{3}{1} = 1$$

$$\frac{AB}{BM} = 1 \times \frac{1}{1} = 1$$

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$$BM = BM$$

$$\frac{1}{\cos \alpha} - \tan \alpha = \frac{1 + \sin \alpha}{|\cos \alpha|}$$

$$\frac{|\sin \alpha|}{\cos \alpha} = \frac{-1}{\cos \alpha} = -\tan \alpha = \frac{-\sin \alpha}{\cos \alpha}$$

$$\sin \alpha < 0$$

$$\frac{1}{|\cos \alpha|} - \frac{\sin \alpha}{\cos \alpha} = \frac{1 + \sin \alpha}{|\cos \alpha|}$$

$$-\frac{\sin \alpha}{\cos \alpha} = \frac{1 + \sin \alpha}{|\cos \alpha|} - \frac{1}{|\cos \alpha|}$$

$$-\frac{\sin \alpha}{\cos \alpha} = \frac{\sin \alpha}{|\cos \alpha|} \quad \cos \alpha < 0$$

پس $\sin \alpha, \cos \alpha$ هر دو منفی هستند.

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ب - α جال $\rightarrow \sin, \cos$

$$\tan \alpha = \frac{1}{\sqrt{}}$$

* $\sin(\alpha + \beta) =$
 $\sin \alpha \cos \beta + \sin \beta \cos \alpha$

: $\frac{1}{\sqrt{}}$ ثابت

$$\sin\left(\frac{13\pi}{4} + \alpha\right) = \sin\left(\frac{1\pi}{4} + \frac{12\pi}{4} + \alpha\right) = \sin\left(\frac{\pi}{4} + \alpha\right) =$$

$$\sin \frac{\pi}{4} \times \cos \alpha + \sin \alpha \times \cos \frac{\pi}{4}$$

$$\tan^2 \alpha + 1 = \frac{1}{\cos^2 \alpha} \rightarrow \frac{1}{\frac{1}{49}} + 1 = \frac{1}{\cos^2 \alpha}$$

$$\cos^2 \alpha = \frac{49}{50} \rightarrow \text{جال} \rightarrow \cos \alpha = \frac{\sqrt{50}}{50}$$

$$\sin^2 \alpha + \cos^2 \alpha = 1$$

$$\sin^2 \alpha = 1 - \frac{49}{50} = \frac{1}{50} = \frac{1}{50\sqrt{}}$$

$$\sin \frac{13\pi}{4} \times \cos \alpha + \sin \alpha \times \cos \frac{13\pi}{4} =$$

$$\frac{-\frac{1}{\sqrt{2}}}{\sqrt{2}} \times \frac{\sqrt{50}}{50} + \frac{1}{\sqrt{2}} \times \frac{-\frac{1}{\sqrt{2}}}{\sqrt{2}} =$$

$$\frac{-\frac{1}{\sqrt{2}}}{\sqrt{2}} \left(\frac{\sqrt{50}}{50} + \frac{1}{50\sqrt{2}} \right) = \frac{-\frac{1}{\sqrt{2}}}{\sqrt{2}} \times \frac{1}{50\sqrt{2}} = \frac{-1}{50}$$