

$$\frac{1}{r} \times \sqrt{r} \times 4 \times \sin \alpha = \frac{1}{r} \Rightarrow \sqrt{r} \sin \alpha = \frac{1}{r} \Rightarrow \sin \alpha = \frac{1}{\sqrt{r}}$$

$$\sin \alpha = \frac{\sqrt{r}}{r} \Rightarrow \alpha = \frac{\pi}{4} \Rightarrow \min \alpha = \frac{\pi}{4}, \max \alpha = \frac{\pi}{4} \Rightarrow \frac{\max}{\min} = 1$$

زاویه ها برابر است

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$$S = a \cdot b \sin \alpha = 0.2 \Rightarrow rK \times rK \sin 100^\circ = 0.2 \Rightarrow 4K^2 \times \frac{1}{2} = 0.2 \Rightarrow rK^2 = 0.1$$

$$\Rightarrow K^2 = 0.1 \Rightarrow K = \sqrt{0.1} \Rightarrow rK = \sqrt{0.1} \times \sqrt{0.1} = 0.1 \Rightarrow \frac{1}{2} = 0.1 (a+b)$$

$$r(\sqrt{0.1} + \sqrt{0.1}) = 0.1 \Rightarrow r = 0.05$$

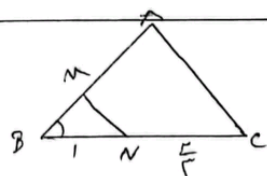
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$$S_{\triangle ABC} - S_{\triangle ADE} = 1, V_0 \Rightarrow \left(\frac{1}{r} \times 0 \times V \times \sin \alpha \right) - \left(\frac{1}{r} \times \Sigma \times V \times \sin \alpha \right) = 1, V_0$$

$$\Rightarrow \frac{\sin \alpha}{r} \times (\Sigma \times V - \Sigma \times V) = 1, V_0 \Rightarrow \sin \alpha = \frac{1}{r} \Rightarrow \alpha = 90^\circ \Rightarrow \cos \alpha = \frac{\sqrt{r}}{r}$$

$$\tan \alpha = \frac{\sin \alpha}{\cos \alpha} = \frac{\frac{1}{r}}{\frac{\sqrt{r}}{r}} = \frac{1}{\sqrt{r}}$$

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$$r \cdot BN = r \cdot NC \Rightarrow BN = \frac{r}{2} \cdot NC$$

$$S_{\triangle ABC} = r(S_{\triangle BNM}) \Rightarrow \frac{1}{2} \times BC \times \sin \beta = r \left(\frac{1}{2} \times BM \times BN \times \sin \beta \right)$$

$$\Rightarrow AB \propto d = 9(BN \times BM) \Rightarrow r = \frac{9(BN \times BM)}{d}$$

$$BM + AM = \frac{9}{d} BM \Rightarrow AM = \frac{2}{d} BM \Rightarrow \frac{BM}{AM} = \frac{d}{2}$$

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$$\frac{|\sin \alpha|}{\cos \alpha} = -\tan \alpha \Rightarrow \frac{|\sin \alpha|}{\cos \alpha} = -\frac{\sin \alpha}{\cos \alpha} \Rightarrow |\sin \alpha| = -\sin \alpha \Rightarrow \sin \alpha \leq 0$$

یعنی α در $(\pi, 2\pi)$ است

$$\frac{1}{\cos \alpha} - \frac{\sin \alpha}{\cos \alpha} = \frac{\sin \alpha + 1}{\cos \alpha} \Rightarrow -\frac{\sin \alpha}{\cos \alpha} = \frac{\sin \alpha}{\cos \alpha} \Rightarrow \cos \alpha < 0$$

$$\cos \alpha < 0 \Rightarrow \sin \alpha < 0 \Rightarrow \alpha \in (\pi, 2\pi)$$

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