

اس کا

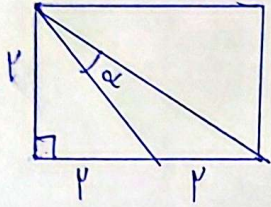
17, 2

تالیف 27

- آرمین ایندی

$$S = \frac{1}{2} AB \times AC \times \sin \alpha \rightarrow f \cdot \omega = \frac{1}{2} \times \sqrt{\mu} \times \gamma \times \sin \alpha \rightarrow \sin \alpha = \frac{\sqrt{\mu}}{\gamma} \rightarrow \frac{\text{Max}(\alpha)}{\text{Min}(\alpha)} = \frac{\frac{\gamma \sqrt{\mu}}{\gamma}}{\frac{\gamma}{\sqrt{\mu}}} = \mu$$

(2) -1



$$\tan(\alpha + \beta) = \frac{1 + \tan \alpha}{1 - \tan \alpha} = \frac{f}{p} \rightarrow r + r \tan \alpha = f - f \tan \alpha$$

$$\Rightarrow \tan \alpha = \frac{1}{\mu} \rightarrow \cot \alpha = \mu$$

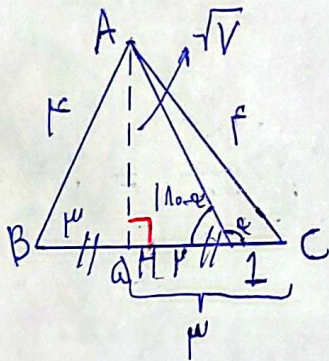
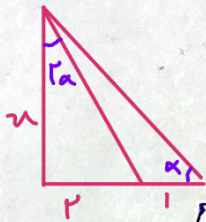
(2) -1

$$\tan \mu \alpha = \frac{r}{\mu}$$

$$\tan \alpha = \frac{\mu}{r}$$

$$\frac{r}{\mu} = \frac{r \left(\frac{\mu}{r} \right)}{1 - \frac{\mu^2}{r^2}} \rightarrow \mu = \frac{r}{r} \rightarrow \tan \alpha = \frac{1}{\mu}$$

$$\cot \alpha = \mu$$



$$A.H = \sqrt{r^2 - \left(\frac{\mu}{2}\right)^2} = \sqrt{V} \Rightarrow \tan(180^\circ - \alpha) = -\tan \alpha = \frac{\sqrt{V}}{r}$$

$$\Rightarrow \tan \alpha = -\frac{\sqrt{V}}{r}$$

(2) -1

$$\mu \sin^2 \alpha + \cos^2 \alpha = \frac{f}{\mu} \xrightarrow{\div \cos^2 \alpha} \mu \tan^2 \alpha + 1 = \frac{f}{\mu} \xrightarrow{\times \frac{1}{\cos^2 \alpha}} \mu \tan^2 \alpha + 1 = \frac{f}{\mu} (1 + \tan^2 \alpha) \Rightarrow \frac{\mu}{\mu} \tan^2 \alpha = \frac{1}{\mu}$$

$$\rightarrow \tan^2 \alpha = \frac{1}{\mu}$$

(2) -5

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

$$\frac{\cos^2 \alpha - f \cos^2 \alpha + f}{\mu - \cos^2 \alpha} = (\mu - \sin^2 \alpha) - (\mu - \cos^2 \alpha) = \cos^2 \alpha - \sin^2 \alpha = \cos 2\alpha$$

(2) -4

$$\tan \alpha = \frac{r}{\mu}$$

$$-\tan\left(\frac{\mu r}{V} - \alpha\right) = -\cot \alpha$$

(2) -V

$$\sin\left(\frac{\mu r}{V} + \alpha\right) \cos\left(\frac{\mu r}{V} - \alpha\right) - \tan\left(\alpha - \frac{\mu r}{V}\right) = \cos \alpha \times -\sin \alpha - (-\cot \alpha)$$

$$\cos^2 \alpha = \frac{1}{1 + \tan^2 \alpha} = \frac{1}{1 + \frac{r^2}{\mu^2}} = \frac{\mu^2}{\mu^2 + r^2} \rightarrow \cos \alpha = -\frac{\mu}{\omega} \quad \& \quad \sin \alpha = \tan \alpha \times \cos \alpha = \frac{r}{\mu} \times -\frac{\mu}{\omega} = -\frac{r}{\omega}$$

$$\cot \alpha = \frac{1}{\tan \alpha} = \frac{\mu}{r}$$

$$\Rightarrow \cos \alpha \times -\sin \alpha + \cot \alpha = \left(-\frac{\mu}{\omega}\right) \left(-\frac{r}{\omega}\right) + \frac{\mu}{r} = \boxed{0.12V} \checkmark$$

$$\eta = \frac{r}{V}$$

(2) -A

$$\begin{aligned} \mu \cos \eta + \sqrt{V} \sin \eta - \sqrt{V} \cos \eta &= \mu \cos\left(\frac{r}{V}\right) + \sqrt{V} (\sin \eta - \cos \eta) = \mu \cos \frac{r}{V} + \sqrt{V} \times -\sqrt{1 - \sin^2 \eta} \\ &= \frac{\mu}{V} + \sqrt{V} \times -\sqrt{1 - \sin^2 \frac{r}{V}} = \frac{\mu}{V} + \sqrt{V} \times -\sqrt{1 - \frac{r^2}{V^2}} = \frac{\mu}{V} - 1 = \boxed{\frac{1}{V}} \checkmark \end{aligned}$$

$$\sin \alpha = \frac{r \tan \frac{\alpha}{V}}{1 + \tan^2 \frac{\alpha}{V}} = \frac{r \times \frac{1}{r}}{1 + \left(\frac{1}{r}\right)^2} = \frac{1}{1V} \quad \& \quad \cos \alpha = \frac{1 - \tan^2 \frac{\alpha}{V}}{1 + \tan^2 \frac{\alpha}{V}} = \frac{1 - \left(\frac{1}{r}\right)^2}{1 + \left(\frac{1}{r}\right)^2} = \frac{1\omega}{1V}$$

(2) -9

$$\frac{\tan \alpha - \sin \alpha}{\sin \alpha - \cos \alpha} = \frac{\sin \alpha - \sin \alpha \cos \alpha}{\sin \alpha \cos \alpha - \cos^2 \alpha} = \frac{\frac{1}{1V} - \frac{1}{1V} \times \frac{1\omega}{1V}}{\frac{1}{1V} \times \frac{1\omega}{1V} - \left(\frac{1\omega}{1V}\right)^2} = \frac{1\omega \times 1V - 1\omega \times 1\omega}{1\omega \times 1\omega - 1\omega \times 1\omega} = \frac{1\omega \times V}{-V \times 1\omega} = \boxed{\frac{1}{\omega}} \checkmark$$

-10

$$\frac{\cot \alpha}{\sin \alpha} > 0 \rightarrow \frac{\cos \alpha}{\sin \alpha} > 0 \rightarrow \frac{\cos \alpha}{\sin \alpha} > 0 \rightarrow \sin \alpha > 0 \quad \& \quad \cos \alpha > 0 \checkmark$$

(1,5)

$$-\sin^2 \alpha > V \sin \alpha \rightarrow V \sin \alpha \cos \alpha > V \sin \alpha$$

$$\rightarrow \sin \alpha (1 - \cos \alpha) < 0$$

$$\sin \alpha > 0$$

$$\cos \alpha > 0$$

~~sin < 0~~

$$\sin \alpha < 0$$

ربع چهارم