

۱ (ب) $\tan \frac{\pi}{2} + \sin \frac{\pi}{2} \cos \frac{\pi}{2} = -1 + \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} = -1 + \frac{1}{2} = -\frac{1}{2}$

۲ (ب) $\tan \frac{\pi}{4} \times \sin \frac{\pi}{4} + \cos \frac{\pi}{4} = \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} = \frac{1}{2} + \frac{1}{\sqrt{2}} = \frac{1}{2} + \frac{\sqrt{2}}{2} = \frac{1+\sqrt{2}}{2}$

۳ $\cos u = \frac{\cos u}{\sin u} = \varepsilon \Rightarrow \cos u = \varepsilon \sin u \Rightarrow$

$\frac{12 \sin u - \sin u}{\varepsilon \sin u + \sin u} = \frac{11 \sin u}{\varepsilon \sin u} = \frac{11}{\varepsilon}$

۴ $\sin \alpha = \varepsilon \cos \alpha \rightarrow \sin \alpha = \varepsilon \cos \alpha$

$\cos^2 \alpha + \varepsilon^2 \cos^2 \alpha = 1 \Rightarrow \cos^2 \alpha = \frac{1}{1+\varepsilon^2} \Rightarrow \cos \alpha = \pm \frac{1}{\sqrt{1+\varepsilon^2}}$

$\cos \alpha = -\frac{1}{\sqrt{5}} = -\frac{\sqrt{5}}{5}$ حالت + غیر قابل قبول
در ربع سوم

۵ (الف) $\sin \alpha = \frac{\sqrt{2}}{10}, \cos \alpha < 0, \sin \alpha > 0$
 $\cos \left(\frac{\pi}{2} + \alpha \right) = \cos \frac{\pi}{2} \cos \alpha - \sin \frac{\pi}{2} \sin \alpha = -\frac{\sqrt{2}}{10} \times \frac{\sqrt{2}}{10} - \frac{1}{10} \times \frac{\sqrt{2}}{10} = -\frac{2}{100} - \frac{\sqrt{2}}{100} = -\frac{2+\sqrt{2}}{100}$

(ب) $\sin \alpha = \frac{\sqrt{2}}{10} \Rightarrow \frac{1}{10} + \cos^2 \alpha = 1 \Rightarrow \cos^2 \alpha = \frac{9}{10} \Rightarrow \cos \alpha = -\frac{3}{\sqrt{10}} = -\frac{3\sqrt{10}}{10}$
 $\frac{1}{\varepsilon} \times \frac{1}{\varepsilon} = \frac{1}{\cos^2 \alpha} \Rightarrow \cos^2 \alpha = \frac{\varepsilon^2}{1} \Rightarrow \cos \alpha = \frac{\varepsilon}{1} = \varepsilon$
 $\tan \alpha = \frac{1}{\varepsilon}, \sin \alpha = \frac{1}{\varepsilon}$

$\sin \left(\frac{\pi}{2} + \alpha \right) = \sin \frac{\pi}{2} \cos \alpha + \sin \alpha \cos \frac{\pi}{2} = \frac{\sqrt{2}}{10} \times \frac{3\sqrt{10}}{10} + \frac{1}{10} \times \frac{\sqrt{2}}{10} = \frac{3\sqrt{2}}{100} + \frac{\sqrt{2}}{100} = \frac{4\sqrt{2}}{100} = \frac{\sqrt{2}}{25}$

۶ $\sin^2 u + \cos^2 u = \frac{5}{4} \Rightarrow \sin^2 u + 1 = \frac{5}{4} \Rightarrow \sin^2 u = \frac{1}{4} \Rightarrow \frac{1}{4} + \cos^2 u = \frac{5}{4} \Rightarrow$

$\cos^2 u = \frac{1}{2} \Rightarrow \tan^2 u = \frac{\sin^2 u}{\cos^2 u} = \frac{\frac{1}{4}}{\frac{1}{2}} = \frac{1}{2}$

$$\sin \alpha = \frac{\sqrt{r}}{r} \Rightarrow \alpha = \begin{cases} 4^\circ \\ 14^\circ \end{cases} \Rightarrow \begin{matrix} \alpha_{\max} = 14^\circ \\ \alpha_{\min} = 4^\circ \end{matrix} \Rightarrow \frac{14^\circ}{4^\circ} = r$$

$$r_k \frac{1}{r} \times r k x r k x \sin \omega' = 4 k^2 x \frac{1}{r} - r k^2 = a c$$

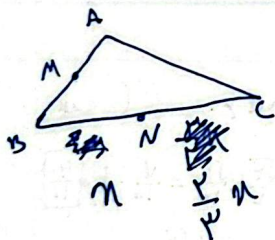
$$k^2 = 1 \lambda \Rightarrow k = \frac{1}{\lambda}$$

$$\rho_{\text{eff}} = \rho \left(\frac{r_0}{r} \right) = 1.2 \Rightarrow 1.2 \sqrt{r} = \boxed{1.2 \sqrt{r}}$$

$$|S_{ABC}^{\Delta} - S_{ADE}^{\Delta}| = 1, \forall \Delta \rightarrow \left| \frac{1}{\Delta} (\omega \times V \times \sin A) - \frac{1}{\Delta} (\epsilon \times V \times \sin A) \right| = 1, \forall \Delta$$

$$\frac{1}{x_1} \times \sin A \left(\frac{100}{100} \right) = \frac{1}{100} \Rightarrow \sin A = \frac{1}{100} \Rightarrow \begin{cases} A = 0.57^\circ \\ A = 180 - 0.57^\circ \end{cases}$$

$\boxed{A = 0.57^\circ} \Rightarrow \tan 0.57^\circ = \frac{1}{\sqrt{e}}$



$$S_{ABC} = \mu \times S_{BMN}$$

$$\mu \times \frac{1}{\cancel{X}} \times \overline{BM} \times \overline{BN} \times \cancel{S_{AB}} = \frac{\cancel{\mu}}{\cancel{\mu}} \times AB \times BC \times \cancel{\sin B}$$

$$\mu \times B M \times \cancel{A M} = (B M + A M) \times \cancel{A M} \quad \text{Q.E.D.}$$

$$\Rightarrow q_{BM} = q_{BM} + q_{AM}$$

$$\begin{aligned} \epsilon_{BM} &= \frac{\Delta}{L} \quad \Rightarrow \quad \frac{BM}{AM} = \frac{\Delta}{L} \quad \Rightarrow \quad \frac{BM}{AM} = \frac{\Delta}{L} \end{aligned}$$

$$\textcircled{1} \quad \frac{1}{\sec \alpha} - \tan \alpha = \frac{1 + \sin \alpha}{|\cos \alpha|} \Rightarrow -\tan \alpha = \frac{1 + \sin \alpha - 1}{|\cos \alpha|} = \frac{\sin \alpha}{|\cos \alpha|}$$

$$(P) \frac{|\sin \alpha|}{\cos \alpha} = -\frac{1}{\cot \alpha} \Rightarrow \frac{|\sin \alpha|}{\cos \alpha} = -\tan \alpha$$

$$\textcircled{1} \text{ step} \Rightarrow \frac{-\sin \alpha}{\cos \alpha} = \frac{\sin \alpha}{|\cos \alpha|} \xrightarrow{\times \frac{1}{\sin \alpha}} \frac{-1}{\cos \alpha} = \frac{1}{|\cos \alpha|} \Rightarrow |\cos \alpha| = -\cos \alpha \Rightarrow \cos \alpha < 0$$

$\frac{|\sin \alpha|}{\cos \alpha} = \frac{-\sin \alpha}{\cos \alpha} \Rightarrow |\sin \alpha| = -\sin \alpha \Rightarrow \sin \alpha.$

$\begin{cases} \sin \alpha < 0 \\ \cos \alpha < 0 \end{cases} \Rightarrow$ در ناحیه سوم