

$$\text{الف)} \tan \frac{11\pi}{8} + \sin \frac{18\pi}{8} \cos \frac{13\pi}{8} =$$

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

$$\text{ب)} \tan \frac{16\pi}{9} \sin \frac{11\pi}{9} + \cos \frac{10\pi}{9} = \left(-\frac{\sqrt{3}}{3} \times \frac{\sqrt{3}}{2} \right) - \frac{1}{2} = 0$$

$$\frac{\cos \alpha}{\sin \alpha} = 2 \rightarrow \cos \alpha = 2 \sin \alpha$$

$$\frac{2 \cos \alpha - \sin \alpha}{\cos \alpha + \sin \alpha} = \frac{11 \sin \alpha - \sin \alpha}{2 \sin \alpha + \sin \alpha} = \boxed{\frac{11}{3}}$$

$$\sin \alpha = 2 \cos \alpha$$

$$(2 \cos \alpha)^2 + \cos^2 \alpha = 1 \rightarrow 5 \cos^2 \alpha = 1 \rightarrow \cos^2 \alpha = \frac{1}{5} \rightarrow \cos \alpha = \pm \frac{\sqrt{5}}{5}$$

ربع دوم است

$$\text{الف)} \cos \left(\frac{11\pi}{8} + \alpha \right) = \cos \frac{11\pi}{8} \cos \alpha - \sin \frac{11\pi}{8} \sin \alpha = -\frac{\sqrt{2}}{2} \cos \alpha - \frac{\sqrt{2}}{2} \sin \alpha$$

$$= -\frac{\sqrt{2}}{2} (\cos \alpha + \sin \alpha) = -\frac{\sqrt{2}}{2} \left(-\frac{\sqrt{2}}{10} + \frac{\sqrt{2}}{10} \right) = \frac{12}{10} = \boxed{\frac{6}{5}}$$

$$\text{ب)} \tan \alpha = \frac{1}{5} \rightarrow 5 \sin \alpha = \cos \alpha \rightarrow \sin \left(\frac{10\pi}{8} + \alpha \right) = \sin \left(\frac{5\pi}{4} + \alpha \right) = -\sin \frac{5\pi}{4} \cos \alpha + \sin \frac{5\pi}{4} \sin \alpha$$

$$= -\frac{\sqrt{2}}{2} \cos \alpha + \frac{\sqrt{2}}{2} \sin \alpha = \frac{\sqrt{2}}{2} \times \frac{5\sqrt{2}}{5} = \boxed{\frac{5}{5}}$$

$$5 \sin^2 \alpha + \cos^2 \alpha = \frac{5}{2} \rightarrow 1 + \sin^2 \alpha = \frac{5}{2} \rightarrow \sin^2 \alpha = \frac{1}{2} \rightarrow \cos^2 \alpha = \frac{1}{2}$$

$$\tan^2 \alpha = \frac{\sin^2 \alpha}{\cos^2 \alpha} = \frac{\frac{1}{2}}{\frac{1}{2}} = \boxed{1}$$

$$S_{ABC} = \frac{1}{x} \times \sqrt{x} \times y \times \sin \alpha = \frac{y}{x} \Rightarrow \sin \alpha = \frac{y}{\sqrt{x}} = \frac{\sqrt{x} \sqrt{x}}{\sqrt{x} \sqrt{x}} = \frac{\sqrt{x}}{\sqrt{x}}$$

$$\sin \alpha = \frac{\sqrt{x}}{\sqrt{x}} \Rightarrow \alpha \begin{cases} \alpha_{\min} = \frac{\pi}{2} \\ \alpha_{\max} = \frac{3\pi}{2} \end{cases} \Rightarrow \frac{\alpha_{\max}}{\alpha_{\min}} = 3$$

$$\begin{aligned} a &= r_m \\ b &= r_m \\ S &= \frac{ab}{r} \sin \alpha \Rightarrow \Delta E = r_m^2 \rightarrow m^2 = 11 \rightarrow m = \sqrt{11} = \sqrt{11} \end{aligned}$$

$$\left. \begin{aligned} a &= 9\sqrt{r} \\ b &= 9\sqrt{r} \end{aligned} \right\} \Rightarrow P = r(a+b) = 18\sqrt{r} + 18\sqrt{r} = 36\sqrt{r}$$

$$S_{ABC} - S_{ADE} = 11V\Delta$$

$$\left. \begin{aligned} L &= \frac{\epsilon \times V}{r} \times \sin A = 11V\Delta \sin A \\ \Delta \times V \times \sin A &= 11\epsilon \sin A \end{aligned} \right\} \Rightarrow \frac{V}{r} \sin A = 11V\Delta \rightarrow \sin A = \frac{1}{r} \rightarrow A = \frac{\pi}{2}$$

$$\tan A = \tan \frac{\pi}{2} = \frac{1}{\frac{\sqrt{x}}{r}} = \frac{1}{\sqrt{x}} = \frac{\sqrt{x}}{x}$$

$$rBN = rNC \rightarrow \frac{BN}{NC} = \frac{r}{r} = 1$$

$$S_{ABC} = r S_{BMN}$$

$$\frac{S_{ABC}}{S_{BMN}} = \frac{AB \times BC \times \sin B}{BM \times BN \times \sin B} = r \rightarrow \frac{AB \times \Delta K}{BM \times CK} = r \rightarrow \frac{\Delta AB}{r BM} = r$$

$$\frac{BM}{AB} = \frac{\Delta K}{r K} = \frac{\Delta}{r} \rightarrow \frac{BM}{AM} = \frac{\Delta}{\Sigma}$$

$$\frac{1}{\sqrt{\cos^2 u}} - \tan u = \frac{1 + \sin u}{|\cos u|} \rightarrow \frac{-\sin u}{\cos u} = \frac{\sin u}{|\cos u|} \rightarrow \begin{cases} \text{I} \cos > 0 \\ \text{II} \cos < 0 \end{cases}$$

$$\text{I} : \frac{-\sin u}{\cos u} = \frac{\sin u}{\cos u} \rightarrow \sin u = 0 \rightarrow u = \pi$$

$$\text{II} : \frac{-\sin u}{\cos u} = \frac{\sin u}{-\cos u} \rightarrow -\tan u = -\tan u \rightarrow u = \left(\frac{\pi}{r}, \frac{\pi}{r} \right) \rightarrow \text{مع } \frac{\pi}{r}$$

$$\frac{|\sin u|}{\cos u} = \frac{-1}{\cos u} \rightarrow \frac{|\sin u|}{\cos u} = \frac{-\sin u}{\cos u} \rightarrow |\sin u| = -\sin u \rightarrow \sin u < 0 \rightarrow \text{مع } \frac{\pi}{r}$$