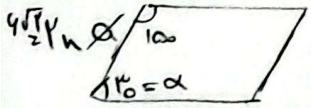
(۱



$S = ab\sin\alpha = 9$

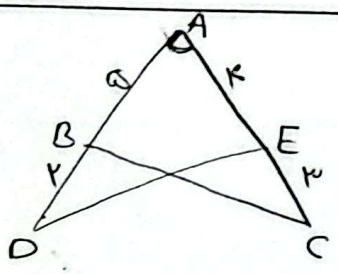
$۲۸ \times ۳۸ \times \frac{1}{۲} = ۵۴$

$۲۸ \to ۹\sqrt{۲}$

$۸^۲ = ۱۸ \to ۸ = ۳\sqrt{۲}$

$(۹\sqrt{۲} + ۹\sqrt{۲}) \times ۲ = ۳۰\sqrt{۲}$

(۲



$S_{ABC} - S_{ADE} = ۱,۷۵$

$\frac{1}{۲} \times ۵ \times ۷ \times \sin A - \frac{1}{۲} \times ۴ \times ۷ \times \sin A = ۱,۷۵$

$\frac{1}{۲} \times ۷(۵\sin A - ۴\sin A) = ۱,۷۵ \to \sin\hat{A} = \frac{1}{۲}$

$\cos^۲ A = ۱ - \frac{1}{۴} = \frac{۳}{۴} \to \cos\hat{A} = \frac{\sqrt{۳}}{۲} \to \tan\hat{A} = \frac{\frac{1}{۲}}{\frac{\sqrt{۳}}{۲}} = \frac{\sqrt{۳}}{۳}$

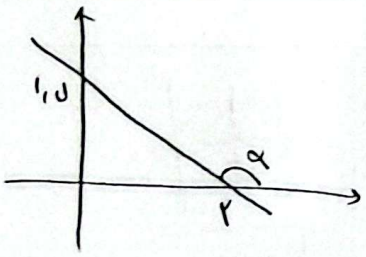
(۳

$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{\sin\alpha}{\cos\alpha} \to \sin\alpha < ۰$

$\frac{1}{|\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} = \frac{۱+\sin\alpha}{|\cos\alpha|} \to \cos\alpha > ۰$

نمی‌شود

(۴



$\tan(\frac{\pi}{۲} - \alpha) = \cot\alpha$

$\lim_{x \to ?} \tan\alpha = -۰,۷۵ \to \cot\alpha = -\frac{۱,۵}{۷۵} = \frac{-۴}{۳}$

$-\frac{۱,۵}{۲} = -۰,۷۵$

(۵

$\frac{۳\cos(۴۶۰^\circ) - ۲\sin(۱۵۸^\circ)}{\sin(۶۴۰) - \cos(۲۹۲^\circ)} = \frac{۳\cos(\frac{۳\pi}{۲} - ۲۲) - ۲\sin(\pi - ۲۲)}{\sin(\pi + ۲۲) - \cos(\frac{۳\pi}{۲} + ۲۲)}$

$\frac{-۳\sin(۲۲) - ۲\sin(۲۲)}{-\sin(۲۲) - \sin(۲۲)} = \frac{-۵}{-۲} = \frac{۵}{۲}$

۶

$$\frac{\sin(\frac{\pi}{2}+\alpha)-\sin(\alpha-\pi)}{|\tan^2\alpha-1|}=\frac{\sin(\frac{\pi}{2}+\alpha)+\sin(\pi-\alpha)}{|\tan^2\alpha-1|}$$

$$=\frac{\cos\alpha+\sin\alpha}{|\tan^2\alpha-1|}=\frac{\frac{2}{3}-\frac{\sqrt{5}}{3}}{|\frac{5}{4}-1|}=\frac{\frac{2-\sqrt{5}}{3}}{\frac{1}{4}}=\boxed{\frac{4-4\sqrt{5}}{3}}$$

$$1-\frac{4}{9}\sin^2\alpha=\frac{5}{9}\ \xrightarrow{\text{ربع اول}}\ \sin\alpha=-\frac{\sqrt{5}}{3}\ \rightarrow\ \tan\alpha=\frac{-\frac{\sqrt{5}}{3}}{\frac{2}{4}}=-\frac{\sqrt{5}}{2}$$

۷

$$\sin^2\alpha+\cos^2\alpha=1\ \rightarrow\ 4\cos^2\alpha+\cos^2\alpha=1\ \rightarrow\ 5\cos^2\alpha=1\ \rightarrow\ \cos^2\alpha=\frac{1}{5}$$

$\xrightarrow[\cos<0,\ \sin<0]{\text{ربع سوم}}$ $\boxed{\cos\alpha=-\frac{\sqrt{5}}{5}}$

۸

$$2mx+(m^2-1)y=2\ \rightarrow\ y=\frac{-2mx}{(m^2-1)}+\frac{2}{(m^2-1)}$$

$\tan\alpha=$ شیب

$$\tan\alpha=\sqrt{3}\ \rightarrow\ \frac{-2m}{m^2-1}=\sqrt{3}\ \rightarrow\ -2m=\sqrt{3}m^2-\sqrt{3}\ \rightarrow\ \sqrt{3}m^2+2m-\sqrt{3}=0$$

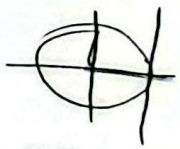
$$m=\frac{-2\pm\sqrt{4+12}}{2\sqrt{3}}\ \begin{cases}\rightarrow\ \frac{-2+4}{2\sqrt{3}}=\frac{2}{2\sqrt{3}}=\frac{1}{\sqrt{3}}\\ \rightarrow\ \frac{-2-4}{2\sqrt{3}}=\frac{-6}{2\sqrt{3}}=-\frac{3}{\sqrt{3}}\end{cases}\ \rightarrow\ \frac{1}{\sqrt{3}}+\frac{3}{\sqrt{3}}=\boxed{\frac{4\sqrt{3}}{3}}$$

۹

$$-\frac{\pi}{4}<x<\frac{\pi}{4}$$

$$-\frac{3\pi}{4}<-x<\frac{\pi}{4}\ \xrightarrow{+\frac{\pi}{2}}\ 0<-x+\frac{\pi}{2}<\frac{3\pi}{4}$$

$$0<\tan(-x+\tfrac{\pi}{2})\ \ldots\ 0<\frac{1-m}{2+m}\qquad \begin{array}{c|ccc}&-2&&1\\ \hline -&|&+&|&-\end{array}\ \rightarrow\ \boxed{(-2,1)}$$



۱۰

$$\tan(300^\circ)\cos(210^\circ)+\tan(480^\circ)\sin(180^\circ)$$

$$\tan(2\pi-\theta_0)\cos(\tfrac{3\pi}{2}-\theta_0)+\tan(2\pi+120^\circ)\sin(4\pi+120^\circ)$$

$$(-\tan\theta_0)(-\sin\theta_0)+(\tan 120^\circ)(\sin 120^\circ)=\frac{\sin^2\theta_0}{\cos\theta_0}+\frac{\sin^2 120^\circ}{\cos 120^\circ}$$

$$\frac{\frac{3}{4}}{\frac{1}{2}}+\frac{\frac{3}{4}}{-\frac{1}{2}}=\boxed{0}$$