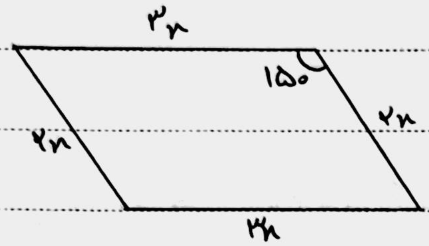
* حنانه موسوی * تکلیف شماره ۲۶ * یازدهم دفتر B

①



$\Rightarrow (2x)(3x)(\sin 150) = 54 \to x^2 = \frac{54}{3} \to x = \sqrt{18}$

$P = 2(2x+3x) = 10x \to 10\sqrt{18} = \boxed{30\sqrt{2}}$

②

$\left(\frac{1}{2}\times 5\times 7\times \sin\hat{A}\right) - \left(\frac{1}{2}\times 7\times 4\times \sin\hat{A}\right) = 1.75 \to \frac{35}{2}\sin A - \frac{28}{2}\sin\hat{A} = 1.75$

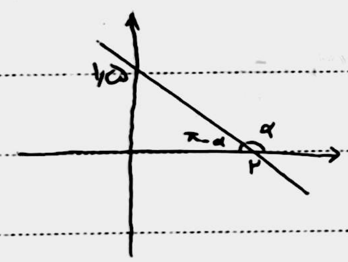
$\frac{7}{2}\sin\hat{A} = \frac{7}{4} \to \sin\hat{A} = \frac{1}{2} \to \hat{A} = 30^\circ \to \tan\hat{A} = \tan 30^\circ = \boxed{\frac{\sqrt{3}}{3}}$

③

$\frac{|\sin\alpha|}{\cos\alpha} = \frac{-1}{\cot\alpha} = \frac{-\sin\alpha}{\cos\alpha} \Rightarrow \sin\alpha < 0 \quad * \quad \frac{1}{\sqrt{\cos^2\alpha}} - \tan\alpha = \frac{1}{|\cos\alpha|} + \frac{\sin\alpha}{-\cos\alpha}$

$= \frac{1+\sin\alpha}{|\cos\alpha|} \Rightarrow |\cos\alpha| = -\cos\alpha \to \cos\alpha < 0 \to \begin{cases}\sin\alpha < 0\\ \cos\alpha < 0\end{cases} \to$ $\boxed{\alpha :}$ ناحیه سوم

④



$\tan(\pi/2 - \alpha) = \cot\alpha$

$\tan(\pi - \alpha) = \frac{1.5}{2} = 3/4 \to \tan\alpha = -3/4$

$\cot\alpha = \tan(\pi/2 - \alpha) = -4/3$

⑤

$\frac{3\cos(248) - 2\sin(158)}{\sin(202) - \cos(292)} = \frac{3\cos(270-22) - 2\sin(180-22)}{\sin(180+22) - \cos(270+22)}$

$= \frac{3\cos(3\pi/2 - 22) - 2\sin(\pi - 22)}{\sin(\pi+22) - \cos(3\pi/2 + 22)} = \frac{-3\sin 22 - 2\sin 22}{-\sin 22 - \sin 22} = \frac{-5\sin 22}{-2\sin 22}$

$\boxed{5/2 = 2.5}$

⑥ $\frac{\sin(\frac{\pi}{2}+\alpha)-\sin(\alpha-\pi)}{|\tan^2\alpha-1|} = \frac{\sin(\frac{\pi}{2}+\alpha)-(-\sin(\pi-\alpha))}{|\tan^2\alpha-1|}$

$= \frac{\cos\alpha+\sin(\pi-\alpha)}{|\tan^2\alpha-1|} = \frac{\sin\alpha+\cos\alpha}{|\tan^2\alpha-1|}$ ★ $\cos\alpha=\frac{2}{3} \to \sin^2\alpha=\frac{5}{9} \to \sin\alpha=\frac{-\sqrt{5}}{3}$ ← ناحیه چهارم

$\tan\alpha=\frac{-\sqrt{5}}{3}\times\frac{3}{2}=\frac{-\sqrt{5}}{2} \Rightarrow \frac{\frac{-\sqrt{5}}{3}+\frac{2}{3}}{|\frac{5}{4}-1|}=\frac{\frac{2-\sqrt{5}}{3}}{\frac{1}{4}}=\frac{4(2-\sqrt{5})}{3}=\boxed{\frac{8-4\sqrt{5}}{3}}$

⑦ ربع سوم $\alpha \to \cos\alpha<0$

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

$\to \cos\alpha=\frac{-1}{\sqrt{5}}=\boxed{\frac{-\sqrt{5}}{5}}$

⑧ $m=\tan 60=\sqrt{3} \Rightarrow m=\frac{-a}{b} \longrightarrow \frac{-2m}{m^2-1}=\sqrt{3}$

$\sqrt{3}m^2+2m-\sqrt{3}=0 \xrightarrow{\Delta=16} m=\frac{-2\pm4}{2\sqrt{3}} \longrightarrow m_1=\frac{1}{\sqrt{3}},\ m_2=\frac{-3}{\sqrt{3}}$

$|m_1-m_2|=|\frac{1}{\sqrt{3}}-(-\frac{3}{\sqrt{3}})|=\frac{4}{\sqrt{3}}=\frac{4\sqrt{3}}{3}$

⑨ $-\frac{\pi}{4}<x<\frac{\pi}{4} \longrightarrow 0<x-\frac{\pi}{4}<\frac{\pi}{2} \xrightarrow{\text{کمان در ربع اول}} \tan\alpha>0$

$\frac{1-m}{2+m}>0$ $\quad$ $-2 \quad 1$: $-\ |\ +\ |\ -$ $\longrightarrow \boxed{m\in(-2,1)}$

⑩ $\tan(300)=\tan(360-60)=-\tan 60=-\sqrt{3}$ ربع ۴

$\cos(210)=\cos(180+30)=-\cos 30=-\frac{\sqrt{3}}{2}$ ربع ۳

$\tan(480)=\tan(540-60)=-\tan 60=-\sqrt{3}$ ربع ۲

$\sin(840)=\sin(900-60)=\sin 60=\frac{\sqrt{3}}{2}$ ربع ۲

AZAD

$(-\frac{\sqrt{3}}{2})(-\sqrt{3})+(-\sqrt{3})(\frac{\sqrt{3}}{2})=\boxed{+\frac{3}{2}-\frac{3}{2}=0}$