تکلیف شماره ۲۶ — فرهام فرزنده — ۱۹,۵ — یازدهم پسر B

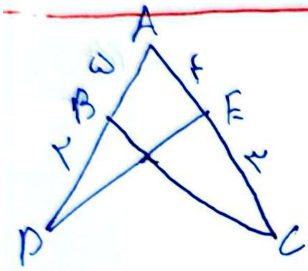
(1) — ۱,۵

$S = ab\sin\alpha = 6x^2 \sin 150° = 54 \Rightarrow x = 3\sqrt{2}$

$\frac{1}{2} \rightarrow 3x^2 = 54 \rightarrow x = 3\sqrt{2}$

$P = 10x = 30\sqrt{2}$

(2) — ۲



$S_{ABC} - S_{ADE} = 1{,}75$

$S_{ABC} = \frac{1}{2} \times 5 \times 7 \times \sin A = 17{,}5 \sin A$

$S_{ADE} = \frac{1}{2} \times 4 \times 7 \times \sin A = 14 \sin A$

$\Rightarrow 17{,}5\sin A - 14\sin A \Rightarrow 3{,}5 \sin A = 1{,}75 \rightarrow \sin A = \frac{1}{2} \Rightarrow A = 30° \Rightarrow \tan A = \boxed{\frac{1}{\sqrt{3}}}$

(3) — ۲

$\frac{1}{\sqrt{\cos^2\alpha}} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|} \Rightarrow \frac{1}{|\cos\alpha|} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|}$

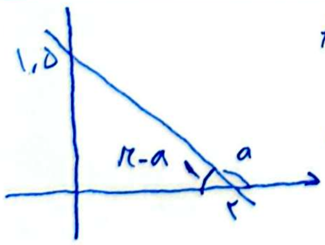
$\frac{1}{|\cos\alpha|} - \tan\alpha = \frac{1}{|\cos\alpha|} + \frac{\sin\alpha}{|\cos\alpha|} \Rightarrow \frac{-\sin\alpha}{\cos\alpha} = \frac{\sin\alpha}{|\cos\alpha|}$

$\Rightarrow \cos\alpha < 0$

$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{1}{\cot\alpha}$

$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{\sin\alpha}{\cos\alpha} \Rightarrow |\sin\alpha| = -\sin\alpha \Rightarrow \sin\alpha < 0 \Rightarrow$ ناحیه سوم

(4) — ۲



$\tan(\pi - a) = \frac{1{,}5}{2} \Rightarrow \tan a = -\frac{3}{4}$

$\tan(\frac{\pi}{2} - a) - \cot a = \frac{1}{\tan a} = \frac{1}{-\frac{3}{4}} = \boxed{-\frac{4}{3}}$

(5) — ۲

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

$\Rightarrow \frac{-3\sin 22 - 2\sin 22}{-\sin 22 - \sin 22} = \frac{-5}{-2} = \boxed{2{,}5}$

(۶) (۲)

$\cos\alpha = \frac{۲}{۳}$

$\frac{\sin(\frac{\pi}{۲}+\alpha)-\sin(\alpha-\pi)}{|\tan^۲\alpha-۱|} \Rightarrow \frac{\cos\alpha+\sin}{|\tan^۲\alpha-۱|}$

If $\cos\alpha = \frac{۲}{۳}$ → ۳, $\sqrt{۵}$, ۲ $\Rightarrow \sin\alpha = -\frac{\sqrt{۵}}{۳}$, $\tan\alpha = -\frac{\sqrt{۵}}{۲} \Rightarrow \frac{\frac{۲}{۳}-\frac{\sqrt{۵}}{۳}}{|\frac{۵}{۴}-۱|} = \frac{\frac{۲-\sqrt{۵}}{۳}}{\frac{۱}{۴}} = \frac{+(۲-\sqrt{۵})}{۳}$ ✓

(۷) (۲)

$\sin\alpha - ۲\cos\alpha \xrightarrow{\div\cos} \tan = ۲$

$\frac{۱}{\cos^۲\alpha} = ۱+\tan^۲\alpha \Rightarrow \frac{۱}{\cos^۲\alpha} = ۵ \Rightarrow \cos\alpha = \pm\frac{\sqrt{۵}}{۵} \xrightarrow{\text{ربع ۲}} -\frac{\sqrt{۵}}{۵}$ ✓

(۸) (۲)

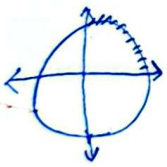
$۲mx + (m^۲-۱)y = ۲ \Rightarrow \frac{-۲m}{m^۲-۱} = \sqrt{۲} \Rightarrow \sqrt{۲}m^۲ + ۲m - \sqrt{۲} = ۰$

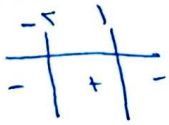
$|m_۱-m_۲| = \frac{\sqrt{\Delta}}{\sqrt{۲}} = \frac{\sqrt{۱۶}}{\sqrt{۲}} = \frac{۴}{\sqrt{۲}}$ ✓

(۹) (۲)

$-\frac{\pi}{۲} < \alpha < \frac{\pi}{۲}$

$\tan(\frac{\pi}{۴}-\alpha) = \frac{۱-m}{۲+m} \Rightarrow ۰ < \frac{\pi}{۴}-\alpha < \frac{\pi}{۲} \Rightarrow ۰ < \tan\frac{\pi}{۴}-\alpha \Rightarrow ۰ < \frac{۱-m}{۲+m}$



$\Rightarrow$  $\rightarrow -۲ < m < ۱$ ✓

(۱۰) (۲)

$\tan(۲۰۰^\circ)\cos(۲۱۰^\circ) + \tan(۲۸۰^\circ)\sin(۳۶۰^\circ)$

$= (\frac{۵\pi}{۳} \times \frac{۷\pi}{۶}) + (\frac{۲\pi}{۳} \times \frac{۲\pi}{۳}) \Rightarrow (-\sqrt{۳})(-\frac{\sqrt{۳}}{۲}) + (-\sqrt{۳})(\frac{\sqrt{۳}}{۲})$

$\frac{۳}{۲} - \frac{۳}{۲} = \boxed{۰}$ ✓