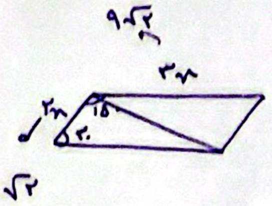
تکلیف سری ۲۶ — یازدهم دختر C — [illegible]

۱



$2x \times 3x \times \sin 30 = 54$

$x^2 = 18 \rightarrow x = \sqrt{18} = 3\sqrt{2}$

محیط $= 10x = 10 \times 3\sqrt{2} = \boxed{30\sqrt{2}}$

۲

$S_{ABC} = \frac{1}{2} \times 5 \times 7 \times \sin A \quad - \quad S_{ADE} = 4 \times 7 \times \frac{1}{2} \times \sin A$

$\frac{35}{2}\sin A - \underset{\frac{28}{2}}{14}\sin A = 1/75 \rightarrow \frac{7}{2}\sin A = \frac{7}{4} \rightarrow \sin A = \frac{\frac{7}{4}}{\frac{7}{2}} = \frac{2}{4} = \frac{1}{2} \qquad \cos A = \frac{\sqrt{3}}{2}$

$\boxed{\tan A = \frac{\sqrt{3}}{3}}$

۳

$\frac{1}{|\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} \xrightarrow{\cos\alpha<0} -\left(\frac{1+\sin\alpha}{\cos\alpha}\right) = \frac{1+\sin\alpha}{-\cos\alpha}$

$\boxed{\cos\alpha<0}$

$\boxed{\sin\alpha<0} \rightarrow \frac{-\sin\alpha}{\cos\alpha} = \frac{-1}{\frac{\cos\alpha}{\sin\alpha}}$

ناحیه سوم $\sin\alpha$ منفی است هم $\cos\alpha$

۴

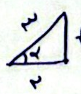
$\tan(\pi-\alpha) = \frac{1/5}{2} \rightarrow \tan\alpha = -\frac{3}{4} \qquad \tan\left(\frac{\pi}{2}-\alpha\right) = \frac{1}{\tan\alpha} = \frac{1}{-\frac{3}{4}} = \boxed{-\frac{4}{3}}$

۵

$\frac{3\cos(248^\circ) - 2\sin(158^\circ)}{\sin(202^\circ) - \cos(292^\circ)} = \frac{3\cos(270^\circ - 22^\circ) - 2\sin(180^\circ - 22^\circ)}{\sin(180^\circ + 22^\circ) - \cos(270^\circ + 22^\circ)} = \frac{-3\sin 22^\circ - 2\sin 22^\circ}{-\sin 22^\circ - \sin 22^\circ} = \frac{5}{2} = \boxed{2/5}$

۶

$\frac{\sin(\alpha+\frac{\pi}{2}) - \sin(\alpha-\pi)}{|\tan^2(\alpha)-1|} = \frac{\cos\alpha + \overbrace{\sin(\pi-\alpha)}^{\sin\alpha}}{|\tan^2(\alpha)-1|} \qquad \cos\alpha = \frac{2}{3}$



$\rightarrow \sin\alpha = -\frac{\sqrt{5}}{3}$

$\cos\alpha = -\frac{\sqrt{5}}{2}$

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

$\sin\alpha = ۲\cos\alpha$ $\quad \sin^۲\alpha + \cos^۲\alpha = ۱$ ۷

$۴\cos^۲\alpha + \cos^۲\alpha = ۱ \to ۵\cos^۲\alpha = ۱ \to \cos^۲\alpha = \frac{۱}{۵} \to \cos\alpha = \frac{۱}{\sqrt{۵}} \times \frac{\sqrt{۵}}{\sqrt{۵}} = -\frac{\sqrt{۵}}{۵}$

چون α در ربع سوم بود

$\boxed{\cos\alpha = -\frac{\sqrt{۵}}{۵}}$

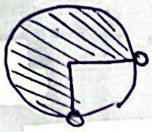
۸

$\tan ۶۰ = \sqrt{۳}$ $\quad (m^۲-۱)y = -۲mx + ۳ \to y = \frac{-۲m}{m^۲-۱}x + \frac{۳}{m^۲-۱} \to \frac{-۲m}{m^۲-۱} = \sqrt{۳} \to \sqrt{۳}m^۲ + ۲m - \sqrt{۳} = ۰$

یعنی شیب $= \sqrt{۳}$

$m^۲ + ۲m - ۳ = ۰ \to (m+۳)(m-۱)$, $\quad m = \frac{-۳}{\sqrt{۳}}$, $\quad m = \frac{۱}{\sqrt{۳}}$

$\frac{۱}{\sqrt{۳}} + \frac{۳}{\sqrt{۳}} = \frac{۴}{\sqrt{۳}} \times \frac{\sqrt{۳}}{\sqrt{۳}} = \boxed{\frac{۴\sqrt{۳}}{۳}}$ یا $\boxed{-\frac{۴\sqrt{۳}}{۳}}$

 ⟵ تغییرات برای ⟵ $-\frac{\pi}{۴} < x < \frac{\pi}{۴}$ ۹

$\tan(\frac{\pi}{۴} - x) = -\tan(x - \frac{\pi}{۴}) \to -\tan ۰, \quad -\tan(-\frac{\pi}{۲})$

$< -\tan(x - \frac{\pi}{۴}) <$

$\tan(۳۰۰)\cos(۲۱۰) + \tan(۱۲۰)\sin(۱۲۰) = (-\sqrt{۳})(-\frac{\sqrt{۳}}{۲}) + (-\sqrt{۳})(\frac{\sqrt{۳}}{۲}) = \frac{۳}{۲} - \frac{۳}{۲} = \boxed{۰}$ ۱۰