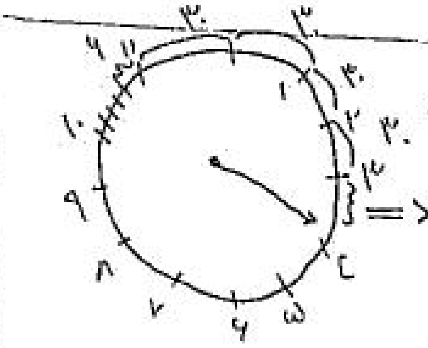
نیوسان شیخ زاهدان   دهم   ۵ کلیشه

۱) الف) ۳:۵۴′

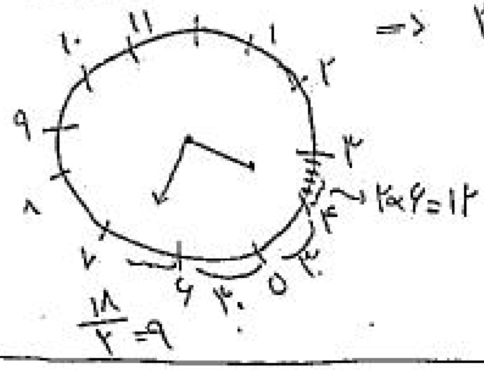


$\Rightarrow 4\times 30 + 27 + 6 = 153^\circ$

$\Rightarrow \frac{54}{2} = 27$

ب) $|5.5\,min - 30\,h| =$
$297 - 90 = 207^\circ$

۲) الف) ۶:۱۸′



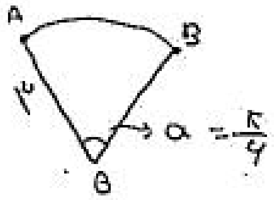
$\Rightarrow 2\times 30 + 12 + 9 = 81^\circ$

$2\times 6 = 12$

$\frac{18}{2} = 9$

ب) $|5.5\,min - 30\,h| =$
$|99 - 180| = 81'$

۳) الف) مساحت:



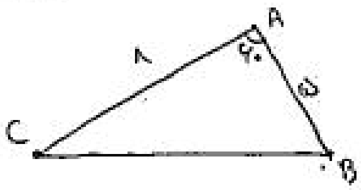
$S = \frac{\alpha}{2} R^2 = \frac{\frac{\pi}{4}}{2} \times 9$

$\frac{\pi}{8} \times 9 = \frac{9\pi}{8}$

ب) محیط: $\widehat{AB} = \alpha R$

$\frac{\pi}{4} \times 3 = \frac{3\pi}{4}$

۴) الف)



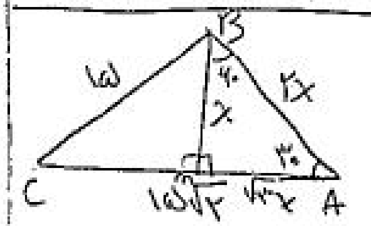
$S = \frac{1}{2} \times 4 \times 5 \times \sin 60 = 10\sqrt{3}$, $\sin 60 = \frac{\sqrt{3}}{2}$

$BC = \sqrt{8^2 + 5^2 - 2\times 8\times 5 \times \cos 60}$, $\cos 60 = \frac{1}{2}$, -40

$B = \sqrt{49} = 7$

ب) محیط $= 5 + 8 + 7 = 20$

۵)



$\hat{B} + \hat{C} = 150^\circ \Rightarrow \hat{A} = 30$

$AC = 15\sqrt{3}$

$BC = 15$

$\hat{B}, \hat{C} = ?\ Rad$

$CH = 15\sqrt{2} - \sqrt{3}x$

$15^2 = x^2 + (15\sqrt{2} - \sqrt{3}x)^2$

$225 = x^2 + 450 + 3x^2 - \frac{15\sqrt{6}}{2}x$

$0 = 4x^2 + 225 - \frac{15\sqrt{6}}{2} \Rightarrow ?$

(۶) $\frac{\tan(\pi-a)+2\tan(\pi+a)}{\tan(2\pi-a)-\tan(2\pi+a)} = \frac{-\tan+2\tan}{-\tan-\tan} = \frac{2\tan}{-2\tan} = -1$

(۷) $\frac{2\tan 70^\circ + \tan 60^\circ}{2\tan 140^\circ - \tan 120^\circ}$ =

$\tan\frac{\pi}{12} = a$

$\frac{\pi}{3} - \frac{\pi}{4} = 60^\circ - 45^\circ = 15^\circ$

$\frac{2\tan(\frac{\pi}{2}-a) + \tan(\frac{\pi}{2}+a)}{2\tan(\pi-a) - \tan(\frac{3\pi}{2}-a)} = \frac{2\cot a + (-\cot a)}{-2\tan a - \cot a} = \frac{\cot a}{-2\tan a - \cot a}$

(۸) $\frac{\sin x+\cos x}{\sin x-\cos x} + \frac{\sin x-\cos x}{\sin x+\cos x} = 2$

$\frac{(\sin x+\cos x)^2 + (\sin x-\cos x)^2}{\sin^2 x - \cos^2 x} = \frac{\sin^2 x + \cos^2 x + 2\sin x\cos x + \sin^2 x + \cos^2 x - 2\sin x\cos x}{\sin^2 - \cos^2 x} =$

$\frac{2\sin^2 x + 2\cos^2 x + 2\overbrace{(\sin^2 x + \cos^2 x)}^{1}}{\sin^2 x - \cos^2 x} = 2$

$\sin^2 x - \cos^2 x = \frac{5}{9} - \frac{4}{9} = \frac{1}{9}$

$\sin^2 x + \sin^2 x - 1 = \frac{\pi}{4}$

$2\sin^2 = \frac{5}{4}$

$\sin^2 x = \frac{5}{8}$

$\cos^2 x = \frac{4}{9}$

$\Rightarrow \tan^2 x = \frac{5}{4} \cdot 4 = 5$

(۹) $\frac{\sin^2 x - 2\cos^2 x + 1}{\sin^2 x + 2\cos^2 x - 1} = 4$

$\frac{1-\cos^2 x - 2\cos^2 x + 1}{1-\cos^2 x + 2\cos^2 x - 1} = \frac{2-3\cos^2 x}{\cos^2 x} = 4 \Rightarrow 2-3\cos^2 = 4\cos^2$

$7\cos^2 = 2$

$\cos^2 = \frac{2}{7}$

$\sin^2 = 1 - \cos^2$

$\frac{5}{7} = 1 - \frac{2}{7}$

$\tan^2 x = \frac{\sin^2}{\cos^2} = \frac{\frac{5}{7}}{\frac{2}{7}} = \frac{5}{2}$

(۱۰) $\cos(22,5) = \cos^2(11,25) = \frac{1+\cos 22,5}{2} = \frac{\frac{2+\sqrt{2}}{2}}{2} = \frac{2+\sqrt{2}}{4}$

$\cos(11,25) = \pm\frac{\sqrt{2+\sqrt{2}}}{2}$ (I ∈ 3QQ)

$\sin(67,5) = \sin^2(67,5) = \frac{1-\cos 135}{2} = \frac{1-\frac{-\sqrt{2}}{2}}{2} = \sqrt{\frac{2-\sqrt{2}}{4}} = \sin(67,5)$

$\frac{\sqrt{2-\sqrt{2}}}{2} = \pm$ (I ∈ 3QQ)