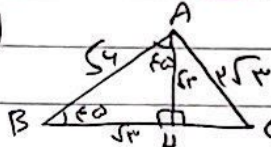
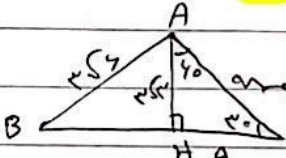


الف) $(\frac{\sin 135^\circ}{\sqrt{2}} + \frac{\sin 30^\circ}{-\sqrt{2}})(\frac{\cos 135^\circ}{-\sqrt{2}} - \frac{\cos 150^\circ}{-\sqrt{2}}) = (\frac{\sqrt{2}}{2})^2 - (\frac{\sqrt{3}}{2})^2 = \frac{1}{2} - \frac{3}{4} = -\frac{1}{4}$ (1)

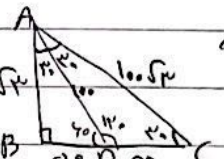
ب) $\frac{1 + 3 \tan^2 10^\circ}{1 + \cos^2 10^\circ + 2 \cos^2 10^\circ} = \tan^2 10^\circ = \frac{1}{3} = \frac{1}{\sqrt{3}}$ $\cos 10^\circ = \frac{\sqrt{3}}{2}$ $\cos 120^\circ = -\frac{1}{2}$

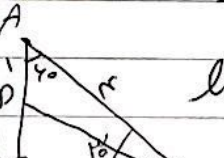
$\frac{1 + 3(\frac{1}{\sqrt{3}})^2}{1 + (\frac{\sqrt{3}}{2})^2 + 2(-\frac{1}{2})^2} = \frac{2}{4} = \frac{1}{2}$

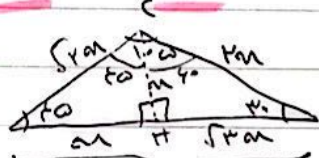
الف)  $CH = ?$ $AH = a$ $AB = a\sqrt{2}$ $AH = \sqrt{2}$ (2)
 $CH^2 = AC^2 - AH^2 \rightarrow (4\sqrt{2})^2 - (\sqrt{2})^2 = 12 - 2 = 10$
 $CH = \sqrt{10} = \sqrt{2}$

ب)  $\hat{B} = ?$ $\frac{\sqrt{2}}{2} \times a = 4$ $a = \frac{4}{\frac{\sqrt{2}}{2}} = \frac{4}{1} = 4\sqrt{2}$

$\sin \hat{B} = \frac{AH}{AB} \rightarrow \frac{4\sqrt{2}}{5\sqrt{2}} = \frac{4}{5}$ $\sin 40^\circ = \frac{4}{5}$ $\sin 40^\circ = \frac{4}{5}$ $\sin 40^\circ = \frac{4}{5}$ $\sin 40^\circ = \frac{4}{5}$

الف)  $m = ?$ $\sin 40^\circ = \frac{BC}{AB} = \frac{8}{10} = 0.8$ $\sin 40^\circ = 0.8$ (3)
 $\frac{AB}{AC} = \frac{1}{2} = \frac{0.8}{1}$ $AC \rightarrow 100$ $(100\sqrt{2})^2 - (0.8\sqrt{2})^2 = 20000 - 1.28 = 19998.72$
 $m = 120 - 20 = 100$ جواب

ب)  $\sin \alpha = ?$ $\sin 40^\circ = \frac{BC}{AC} = \frac{8}{6} = \frac{4}{3}$ $BC = 4\sqrt{2}$
 $DC = \sqrt{BC^2 + BD^2} = \sqrt{12 + 1} = \sqrt{13}$ $\sin \alpha = \frac{BD}{DC} = \frac{1}{\sqrt{13}} = \frac{\sqrt{13}}{13}$

 $\frac{AB}{AC} = ?$ $m = \frac{\sqrt{2}}{2}$ $AC = \sqrt{2}m$ (4)
 $\sin 40^\circ = \frac{\sqrt{2}}{2} = \frac{HB}{CB} = \frac{\sqrt{2}m}{m}$ $\frac{AB}{AC} = \frac{1 + \sqrt{2}m}{\sqrt{2}m} = \frac{1 + \sqrt{2}}{2} = \frac{\sqrt{2} + \sqrt{2}}{2}$

$S_{ABE} = \frac{1}{2} \times 2 \times 4 \times \sin \alpha$ (5)
 $S_{BCD} = \frac{1}{2} \times 4 \times 3 \times \sin \alpha = \frac{6}{1} = \frac{6}{1}$

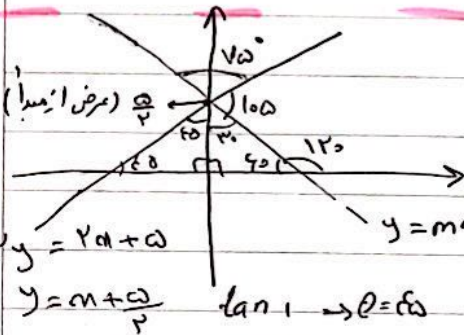
$$\text{الف) } 2 \times \frac{1}{r} \times 3 \times r \times \underbrace{\sin 120^\circ}_{\frac{\sqrt{3}}{2}} = 4\sqrt{3}$$

$$\text{ب) } \frac{1}{r} \times 3 \times r \times \sin 120^\circ = 3\sqrt{3} \quad (4)$$

$$y = au + b \rightarrow y = \frac{1}{r}u + b \quad \tan \theta = \frac{1}{r} \quad 1 + \tan^2 = \frac{1}{\cos^2} \quad (5)$$

$$\text{جيب} = \frac{y_a - y_p}{u_a - u_p} = \frac{r}{r} = \frac{1}{r} \quad \cos = \frac{1}{\sqrt{1 + \frac{1}{r^2}}} \checkmark$$

$$\cos = \frac{1}{\sqrt{1 + \frac{1}{r^2}}} \quad \frac{1}{r} \times \frac{r}{\sqrt{1 + \frac{1}{r^2}}} \checkmark$$



$$\tan 120^\circ = \frac{\sqrt{3}}{r} = -\sqrt{3} \quad (1)$$

$$y = -\sqrt{3}u + b \quad \frac{a}{r} = -\sqrt{3}(0) + b$$

$$m = -\sqrt{3} \quad b = \frac{a}{r} \quad mb = \frac{-a\sqrt{3}}{r}$$

$$\frac{a\pi}{r} = 120^\circ = u \quad \cos(\pi + 120^\circ) + \sin(\frac{\pi}{r} + 120^\circ) - \tan(\frac{\pi}{r} + 120^\circ) \quad (9)$$

$$\cot 120^\circ = \frac{-\frac{\sqrt{3}}{r}}{\frac{1}{r}} = -\sqrt{3} \quad \cos(120^\circ) - \cos(120^\circ) - \cot(120^\circ) = -\cot(120^\circ) = \sqrt{3}$$

$$\frac{\sin(\frac{14\pi}{r} + u) + \cos(\frac{14\pi}{r} - u)}{\cos(\frac{14\pi}{r} + u) - \sin(\frac{14\pi}{r} - u)} = \frac{\cos(u) - \sin(u)}{\cos(u) + \sin(u)} \quad (10)$$

$$\frac{\cos(u) - \sin(u)}{-\cos(u) - \sin(u)} = -1$$

