یاسا محمدی

۱۸٫۲۵

۱- الف) $(\sin 45^\circ + \sin 30^\circ)(\cos 45^\circ - \cos 60^\circ)$

$\frac{\sqrt{2}}{2} + \frac{1}{2}$ $\quad$ $\frac{\sqrt{2}}{2} - \frac{\sqrt{3}}{2}$

$\left(\frac{\sqrt{2}-\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}+\sqrt{3}}{2}\right)$

$\frac{2-3}{4} = \frac{-1}{4}$

ب) $\frac{1}{1+\tan^2 210^\circ} = \frac{1}{\sec^2 210^\circ}$

$4\cos^2 330^\circ + 4\cos^2 225^\circ$

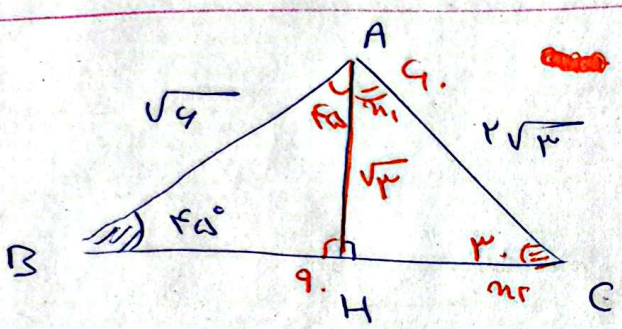
$\frac{3}{4} \quad \frac{2}{2}$

① $\frac{1}{4} = \frac{-\sqrt{2}}{2}$

$\frac{1+1}{3+1} = \frac{2}{4} = \frac{1}{2}$ ✓

۱٫۷۵

۲-



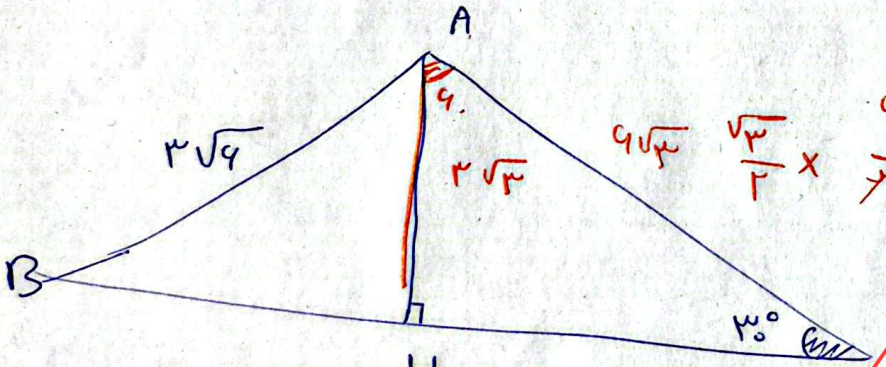
الف) طول HC

$\frac{\sqrt{2}}{2} \times \sqrt{6} = \frac{\sqrt{12}}{2} = \sqrt{3}$

$\sin 60^\circ = \frac{\sqrt{3}}{2}$ $\quad$ $\frac{\sqrt{3}}{2} \times 2\sqrt{3} = 3$ ✓

۲

ب) اندازه زاویه B

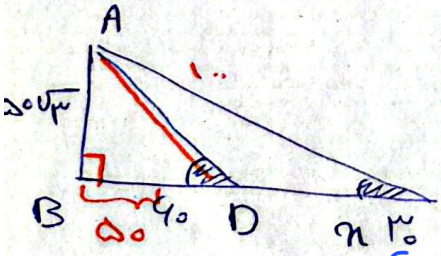


$\frac{\sqrt{3}}{2} \times \frac{6\sqrt{3}}{3} = 9$

$\sin B = \frac{3\sqrt{3}}{3\sqrt{6}}$

$\frac{\sqrt{2}}{2}$ $\quad$ $\sin B$ $\quad$ 45°

۳- الف) مقدار x



$\frac{\sqrt{3}}{2} \times AD = 50\sqrt{3}$

$AD = 100$

$\frac{50+x}{50\sqrt{3}} = \frac{\sqrt{3}}{2}$

$150 = 100 + 2x$

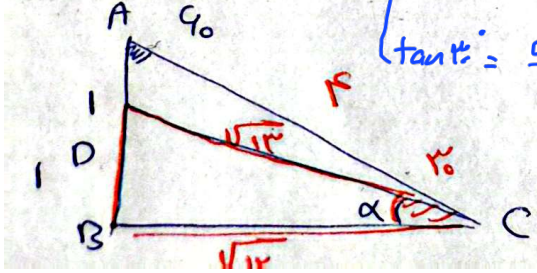
$x = 25$

ب) مقدار $\sin\alpha$

الف) $\tan 60^\circ = \frac{50\sqrt{3}}{BD} \rightarrow BD = 50$

$\tan 45^\circ = \frac{50\sqrt{3}}{BC} \rightarrow BC = 150$

$\rightarrow x = BC - BD \rightarrow x = 150 - 50 = 100$



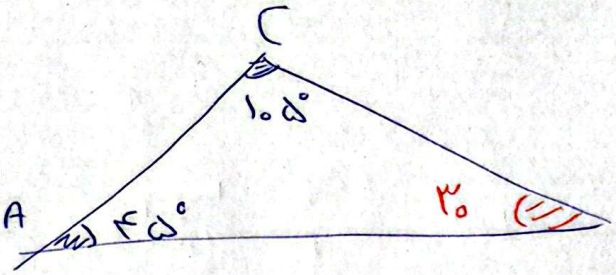
$\frac{1}{\sqrt{12}} \times \frac{\sqrt{12}}{\sqrt{12}} = \frac{\sqrt{12}}{12}$ ✓

۱٫۵

۴- پاسا محمدی

$\sin 10^\circ = \sin^2 10^\circ = \frac{1-\cos 2\alpha}{2}$

$\frac{\frac{1+\sqrt{3}}{2}}{2} = \frac{2+\sqrt{3}}{4}$ $\quad ? = \frac{AB}{AC}$



$\sin = \frac{\sqrt{2+\sqrt{3}}}{2}$ (۲)

$\frac{AB}{\sin 10^\circ} = \frac{AC}{\sin 30^\circ}$

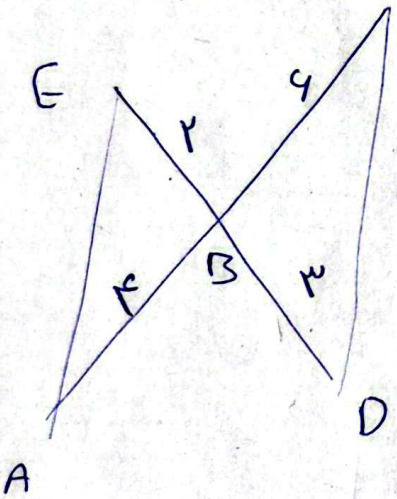
$AB \times \sin 30^\circ = AC \times \sin 10^\circ$

$\frac{AB}{AC} = \frac{\sin 10^\circ}{\sin 30^\circ}$

$\frac{\sqrt{2+\sqrt{3}}}{4}$ ✓

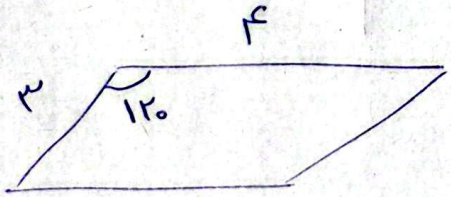
۵- دنبال مثل

$\frac{S_{\Delta ABE}}{S_{\Delta BCD}}$



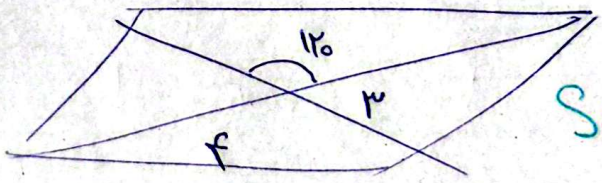
$\frac{\frac{1}{2} \times \sin\alpha \times 4 \times 2}{\frac{1}{2} \times \sin\alpha \times 3 \times 6} = \frac{4}{9}$ ✓ (۲)

۶- ب) مساحت الاضلاع ها را بدست آورید.



$3 \times 4 \times \sin 120^\circ = 6\sqrt{3}$ ✓

الف)



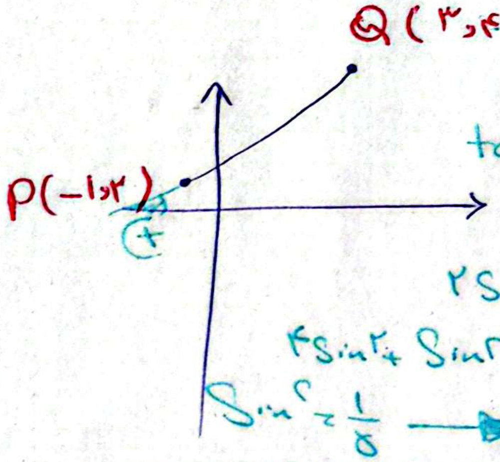
$S = \frac{1}{2} \times 3 \times 4 \times \sin\alpha$ $\quad \sin\alpha = \frac{\sqrt{3}}{2}$

$3\sqrt{3}$ ✓ (۲)

ب)

پارسا محمدی

۷- اگر خطی که از نقاط P و Q با محور x زاویه θ بسازد $\cos\theta$?



شیب خط $= \frac{\Delta y}{\Delta x} = \frac{۴-۲}{۳-(-۱)} = \frac{۲}{۴} = \frac{۱}{۲}$

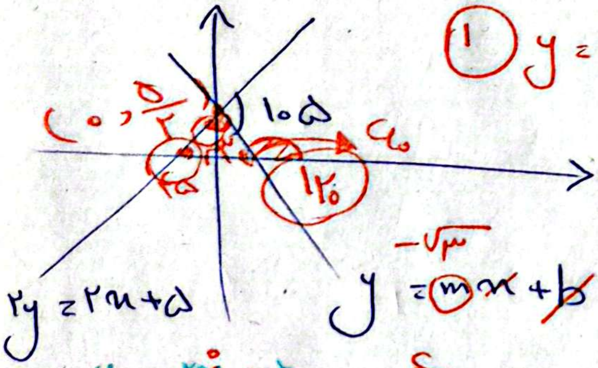
$\tan = \frac{1}{۲} = \frac{\sin}{\cos} = \frac{1}{۲}$

$۲\sin = \cos$

$۴\sin^۲ + \sin^۲ = 1$

$\sin^۲ = \frac{1}{۵} \longrightarrow \frac{1}{\sqrt{۵}}$ $\boxed{\frac{۲}{\sqrt{۵}} = \cos}$ ✓ (۲)

۸- m.b ? زاویه ۴۵ = شیب = ۱ (۱) $y = x + \frac{۵}{۲}$



$y = mx + b$, $-\sqrt{۳}$, $\frac{۵}{۲}$

$-\sqrt{۳} \times \frac{۵}{۲}$

$-\frac{۵\sqrt{۳}}{۲}$ ✓ (۲)

$y = \frac{۲x + ۵}{۲}$ $\frac{۵}{۲}$

۹- $f(\frac{۵\pi}{۶})$ $f(x) = \cos(\pi + x) + \sin(\frac{\pi}{۲} - x) - \tan(\frac{۳\pi}{۲} + x)$

$\cot$ $+\cos x$ $-\cos x$ $(--)\cot$ $+\cot$

$\cot(۱۵۰^\circ) = \dfrac{-\frac{\sqrt{۳}}{۲}}{\frac{1}{۲}}$ $-\frac{۴\sqrt{۳}}{۴} = -\sqrt{۳}$ ✓ (۲)

۱۰- $\frac{\sin(\frac{۱۷\pi}{۲} + x)\ \ \cos(\frac{۱۵\pi}{۲} - x)}{\cos(۳\pi + x)\ \ -\sin(۴\pi - x)} = ۱$ → -1

$+\cos x$ $+\sin x$ → $-\sin x$

$+\cos x$ → $-\cos x$ $-\ -\sin x$ $+$

(۱)