نام و نام خانوادگی هستی نصیری نژاد ...... پاسخنامه تشریحی تکلیف شماره ..۲.. کلاس دهم دختران A جمع

۴/۵ ۲۶/۵

۱

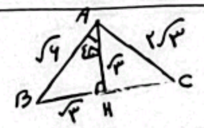
الف) $\sin 135° = \frac{\sqrt{2}}{2}$ $\sin 300° = -\frac{\sqrt{3}}{2}$ $\cos 315° = \frac{\sqrt{2}}{2}$ $\cos 150° = -\frac{\sqrt{3}}{2}$

$(\sin 135° + \sin 300°)(\sin 315° - \cos 150°) = \left(\frac{\sqrt{2}}{2} + \left(-\frac{\sqrt{3}}{2}\right)\right)\left(\frac{\sqrt{2}}{2} - \left(-\frac{\sqrt{3}}{2}\right)\right) = \left(\frac{\sqrt{2}}{2}\right)^2 - \left(\frac{\sqrt{3}}{2}\right)^2 = \frac{1}{2} - \frac{3}{4} = \boxed{-\frac{1}{4}}$

ب) $\tan 210° = \frac{\sqrt{3}}{3}$ $\cos 330° = \frac{\sqrt{3}}{2}$ $\cos 225 = -\frac{\sqrt{2}}{2}$

$\frac{1 + 3\tan^2 210°}{4\cos^2 330° + 2\cos^2 225°} = \frac{1 + 3\left(\frac{\sqrt{3}}{3}\right)^2}{4\left(\frac{\sqrt{3}}{2}\right)^2 + 2\left(-\frac{\sqrt{2}}{2}\right)^2} = \frac{1+1}{3+1} = \frac{2}{4} = \boxed{\frac{1}{2}}$

۲

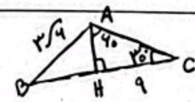


الف) طول HC؟ $\boxed{3}$

$HB = HA = \frac{\sqrt{2}}{2} \times \sqrt{6} = \sqrt{3}$

$AH^2 + HC^2 = AC^2 \to (\sqrt{3})^2 + (HC)^2 = (2\sqrt{3})^2$

$3 + HC^2 = 12 \to \boxed{HC = 3}$



ب) اندازه B؟ ۴۵°

ضلع روبرو به زاویه ۶۰°، $\frac{\sqrt{3}}{2}$ وتر است پس:

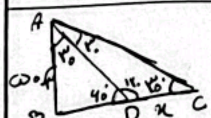
$x \times \frac{\sqrt{3}}{2} = 9 \to x = 6\sqrt{3} \to AC = 6\sqrt{3}$

$AH = \frac{1}{2} \times 6\sqrt{3} = \boxed{3\sqrt{3}}$

$3\sqrt{6} \times x = 3\sqrt{3} \to x = \frac{\sqrt{2}}{2} \to \boxed{\hat{B} = 45°}$

sinB

۳



الف) x؟ 100

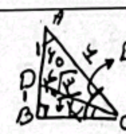
ضلع روبرو به زاویه ۶۰°، $\frac{\sqrt{3}}{2}$ وتر است:

$x \times \frac{\sqrt{3}}{2} = 50\sqrt{3} \to x = 100$ ← مجهول

$\to AD = 100$

$AD = DC \to 100 = DC = x$

← x در شکل.

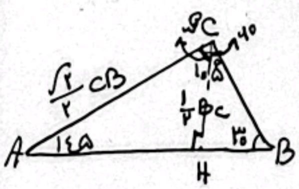


ب) $\sin\alpha = ?$ $B = 30° \to AC = 4$

$\to BC = \frac{\sqrt{3}}{2} \times 4 = 2\sqrt{3} \to DC^2 = 1^2 + (2\sqrt{3})^2 = 13$ $\boxed{DC = \sqrt{13}}$

$\sin\alpha = \frac{\text{مقابل}}{\text{وتر}} = \frac{1}{\sqrt{13}} = \frac{\sqrt{13}}{13} \to \boxed{\frac{\sqrt{13}}{13}}$

۴



$\frac{AB}{AC} = \frac{\frac{1+\sqrt{3}}{2} CB}{\frac{\sqrt{2}}{2} CB} = \frac{\cancel{2}(1+\sqrt{3})}{\cancel{2}(\sqrt{2})} = \frac{1+\sqrt{3}}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}}$

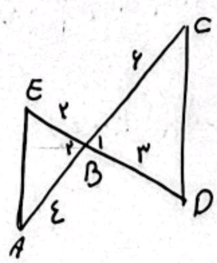
$\boxed{\frac{\sqrt{2}+\sqrt{6}}{2}}$

$CH = \frac{1}{2} \times BC \to \frac{BC}{2}$

$CH = AH$

$AC = \frac{\sqrt{2}}{2} CB$, $BH = \frac{\sqrt{3}}{2} CB$

۵

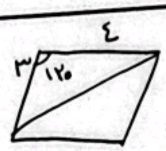


$B_1 = B_2$

$\frac{S_{\triangle ABE}}{S_{\triangle BCD}} = \frac{\cancel{\frac{1}{2}} \times \cancel{2} \times 4 \times \cancel{\sin B}}{\cancel{\frac{1}{2}} \times \cancel{6}^{3} \times 3 \times \cancel{\sin B}} = \boxed{\frac{4}{9}}$

۶

الف)



$مساحت مثلث = \frac{1}{2}\times 3\times 4\times \sin 120^\circ$

$\rightarrow \frac{1}{\cancel{2}}\times 3\times \cancel{4}\times \frac{\sqrt{3}}{\cancel{2}} = 3\sqrt{3}$

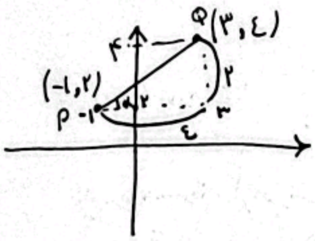
$\rightarrow مساحت = 2\times 3\sqrt{3} = 6\sqrt{3}$

ب)

$\frac{1}{2}\times 2\times \frac{3}{2}\times \sin 120^\circ = \frac{3}{2}\times\frac{\sqrt{3}}{2} = \frac{3\sqrt{3}}{4}$

$مساحت = 4\times\frac{3\sqrt{3}}{4} = \boxed{3\sqrt{3}}$

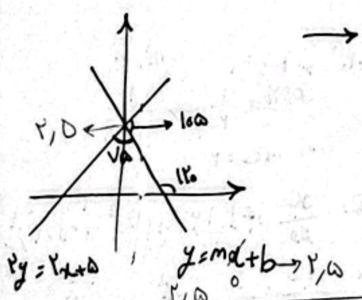
۷



$\cos\alpha = \frac{مجاور}{وتر} = \frac{4}{2\sqrt{5}} = \frac{2}{\sqrt{5}}\times\frac{\sqrt{5}}{\sqrt{5}} = \boxed{\frac{2\sqrt{5}}{5}}$

$PQ^2 = \underbrace{4^2+2^2}_{20} \Rightarrow PQ = 2\sqrt{5}$

۸



$x=0 \rightarrow 2y = (2)(0)+5 \rightarrow y = 2.5$

$\rightarrow b = 2.5$

$m = \tan 120 = \frac{\sin 120^\circ}{\cos 120^\circ} = \frac{\frac{\sqrt{3}}{2}}{\frac{-1}{2}} = -\sqrt{3}$

$m\times b = 2.5\times -\sqrt{3} = -2.5\sqrt{3} = \boxed{-\frac{5\sqrt{3}}{2}}$

۹

$f(x) = \cos(\pi+x)+\sin\left(\frac{\pi}{2}-x\right)-\tan\left(\frac{3\pi}{2}+x\right) \rightarrow -\cos x+\cos x+\cot x =$

$\cot x \rightarrow x = 150^\circ \rightarrow \frac{5\pi}{6} = 150^\circ$

$\rightarrow \cot 150^\circ = \frac{-\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \boxed{-\sqrt{3}}$

۱۰

$\frac{\sin\left(\frac{17\pi}{2}+x\right)+\cos\left(\frac{15\pi}{2}-x\right)}{\cos(3\pi+x)-\sin(4\pi-x)} = \frac{\sin\left(8\pi+\frac{\pi}{2}+x\right)+\cos\left(7\pi+\frac{\pi}{2}-x\right)}{\cos(2\pi+\pi+x)-\sin(3\pi-x)}$

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