نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

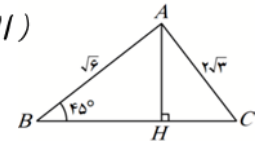
۱ (۲)

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

ب) $\frac{1+3\tan^2 210^\circ}{4\cos^2 330^\circ + 2\cos^2 225^\circ} = \frac{1 + 3\times\left(\frac{-1}{-\sqrt{3}}\right)^2}{4\times\frac{3}{4} + 2\times\frac{2}{4}} = \frac{2}{4} = \frac{1}{2}$ ✓

۲ (۲)

الف)

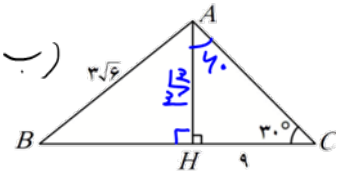


$\hat{B} = 45^\circ \Rightarrow AH = BH$

$\rightarrow \sqrt{6}^2 = 6 \rightarrow AH = BH = \sqrt{6}$

$(\sqrt{6})^2 + HC^2 = (3\sqrt{2})^2 \rightarrow HC = 3$ ✓

ب)

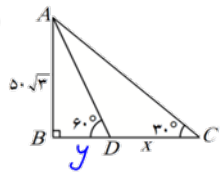


$\cot 30^\circ = \sqrt{3} = \frac{HC}{AH} = \frac{9}{AH} \Rightarrow AH = \frac{9}{\sqrt{3}} = 3\sqrt{3}$

$\Rightarrow \sin B = \frac{2\sqrt{3}}{2\sqrt{6}} = \sqrt{\frac{1}{2}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2} \Rightarrow \hat{B} = 45^\circ$ ✓

۳ (۲)

الف)

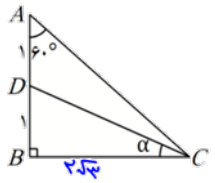


$\cot 30^\circ = \frac{BC}{AB} = \frac{x+y}{50\sqrt{3}} = \sqrt{3} \Rightarrow x+y = 150$

$\cot 60^\circ = \frac{BD}{AB} = \frac{y}{50\sqrt{3}} = \frac{1}{\sqrt{3}} \Rightarrow y = 50$

$\Rightarrow x = 150 - 50 = 100$ ✓

ب)

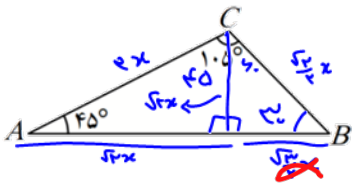


$\cot 60^\circ = \frac{AB}{BC} = \frac{2}{BC} = \frac{1}{\sqrt{3}} \Rightarrow BC = 2\sqrt{3}$

$DC^2 = BC^2 + DB^2 = 12 + 1 = 13 \Rightarrow DC = \sqrt{13} \Rightarrow \sin\alpha = \frac{1}{\sqrt{13}}$ ✓

۴ (۱)

$\tan 30^\circ = \frac{\sqrt{2}m}{BH} = \frac{\sqrt{3}}{3} \rightarrow BH = \sqrt{6}m$

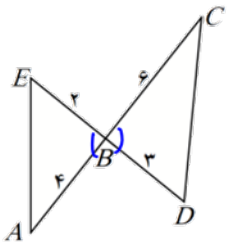


$\frac{\sqrt{3}}{2} = \frac{\sqrt{2}}{\sqrt{3}}$

$\frac{AB}{AC} = \frac{(\sqrt{3}+\sqrt{6})m}{2m} = \frac{\sqrt{3}+\sqrt{6}}{2}$

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

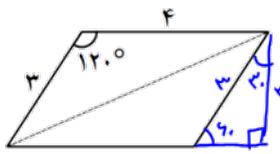
۵ (۲)



$\frac{\sin B' \times \frac{1}{2} \times 2 \times 4}{\sin B' \times \frac{1}{2} \times 3 \times 6} = \frac{8}{18} = \frac{4}{9}$ ✓

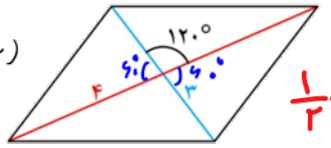
۶ (۱٫۵)

الف)



$\frac{x}{۴}=\cos۳۰^\circ=\frac{\sqrt{۳}}{۲}\Rightarrow x=۲\sqrt{۳}$ $\Rightarrow S=۴\times۲\sqrt{۳}=۶\sqrt{۳}$ ✓

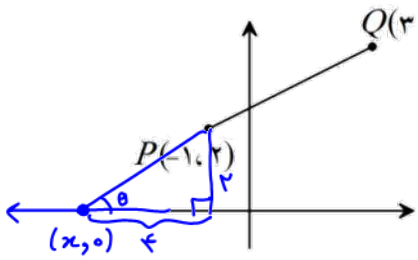
ب)



$\frac{۱}{۲}\times۳\times۴\times\sin۱۲۰^\circ=۳\sqrt{۳}$ (۳√۳)

$S=\frac{۱}{۲}ab\sin\alpha$

۷ (۲)

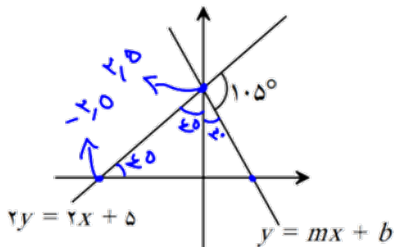


$۴\to۲=۳\to-۱$

$۲\to۰=-۱\to-۵$

$۴^۲+۲^۲=۲۰\to\cos\theta=\frac{۴}{\sqrt{۲۰}}=\sqrt{\frac{۱۶}{۲۰}}=\sqrt{\frac{۴}{۵}}=\frac{۲}{\sqrt{۵}}$ ✓

۸ (۲)



$\cot۳۰^\circ=\frac{۲٫۵}{x}=\sqrt{۳}\Rightarrow x=\frac{۲٫۵}{\sqrt{۳}}\Rightarrow m\times\frac{۲٫۵}{\sqrt{۳}}+۲٫۵=۰\Rightarrow m=-\sqrt{۳}$

$b=۲٫۵$

$\Rightarrow mb=-۲٫۵\sqrt{۳}$ ✓

۹ (۲)

$f(\frac{۵\pi}{۶})=\cos(\frac{۱۱\pi}{۶})+\sin(-\frac{۲\pi}{۳})-\tan(\frac{۷\pi}{۳})=\frac{\sqrt{۳}}{۲}+(-\frac{\sqrt{۳}}{۲})-\sqrt{۳}=-\sqrt{۳}$

$\tan(\frac{\pi}{۳})$

۱۰ (۲)

$$\frac{\sin\left(\frac{۱۷\pi}{۲}+x\right)+\cos\left(\frac{۱۵\pi}{۲}-x\right)}{\cos(۳\pi+x)-\sin(۶\pi-x)}=\frac{\cos(x)+\sin(-x)}{-\cos(x)-\sin(-x)}=-۱$$ ✓