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

۱

الف) $\left(\frac{\sqrt{۲}}{۲}+\left(-\frac{\sqrt{۳}}{۲}\right)\right)\left(\frac{\sqrt{۲}}{۲}-\left(\frac{\sqrt{۳}}{۲}\right)\right)=\left(\frac{\sqrt{۲}}{۲}-\frac{\sqrt{۳}}{۲}\right)\left(\frac{\sqrt{۲}}{۲}+\frac{\sqrt{۳}}{۲}\right)=\frac{۲}{۴}-\frac{۳}{۴}=-\frac{۱}{۴}$ ✓

(۱)

ب) $\frac{۱+۳\left(-\sqrt{۳}\right)^{۲}}{۴\left(\frac{\sqrt{۳}}{۲}\right)^{۲}+۲\left(-\frac{\sqrt{۲}}{۲}\right)^{۲}}=\frac{۱۰}{۳+۱}=\frac{۱۰}{۴}=\frac{۵}{۲}=۲,۵$ $\quad \frac{۱+۳\left(\frac{\sqrt{۳}}{۳}\right)^{۲}}{۴\left(\frac{\sqrt{۳}}{۳}\right)^{۲}+۲\left(-\frac{\sqrt{۲}}{۲}\right)^{۲}}=\frac{۱+۱}{۳+۱}=\frac{۲}{۴}=\frac{۱}{۲}$

۲

الف) $\sin ۴۵=\frac{AH}{\sqrt{۲}}=\frac{\sqrt{۲}}{۲}\Rightarrow AH=\sqrt{۳}$ (۱)

$\frac{\sqrt{۳}}{۲\sqrt{۳}}=\sin C=\frac{۱}{۲}\Rightarrow C=۳۰$ $\quad \cos ۳۰=\frac{\sqrt{۳}}{۲}=\frac{CH}{۲\sqrt{۳}}\Rightarrow CH=۳\sqrt{۲}$ ✓

ب) $\cos ۳۰=\frac{CH}{AC}=\frac{\sqrt{۳}}{۲}=\frac{۹}{۹\sqrt{۳}}$ $\quad \tan ۳۰=\frac{AH}{۹}\rightarrow AH=۳\sqrt{۳}$

$\sin B=\frac{۳\sqrt{۳}}{۶\sqrt{۳}}=\frac{۱}{۲}\Rightarrow B=۳۰$ $\quad \sin \hat{B}=\frac{AH}{AB}\rightarrow \sin \hat{B}=\frac{۳\sqrt{۳}}{۶\sqrt{۳}}=\frac{\sqrt{۲}}{۲}$

$\rightarrow \hat{B}=۴۵^{\circ}$

۳

الف) $\sin ۶۰=\frac{\sqrt{۳}}{۲}=\frac{۵۰\sqrt{۳}}{۱۰۰}$ $\quad ۱۵۰-۵۰=۱۰۰$ ✓

$\sin ۳۰=\frac{۱}{۲}=\frac{۵۰\sqrt{۳}}{۱۰۰\sqrt{۳}}$

$\sin ۹۰=\frac{\sqrt{۳}}{۲}=\frac{۱۵۰}{۱۰۰\sqrt{۳}}$

(۲)

ب) $\sin ۳۰=\frac{۱}{۲}=\frac{۲}{۴}$ $\quad \sin ۶۰=\frac{\sqrt{۳}}{۲}=\frac{۲\sqrt{۳}}{۴}$ $\quad \sin \alpha=\frac{۱}{\sqrt{۱۳}}$

$(۲\sqrt{۳})^{۲}+(۱)^{۲}=CD^{۲}$ ✓

$۱۲+۱\Rightarrow \sqrt{۱۳}=DC$

۴

$\frac{AB}{AC}=\frac{\sqrt{۲}+\sqrt{۶}}{۲}=\left(\frac{\sqrt{۲}}{۲}\right)+\left(\frac{\sqrt{۶}}{۲}\right)$ ✓

$\cos ۴۵=\frac{AH}{AC}=\frac{\sqrt{۲}}{۲}$

$(\sqrt{۲})^{۲}+(CH)^{۲}=(۲)^{۲}$

$CH=\sqrt{۲}$

(۲)

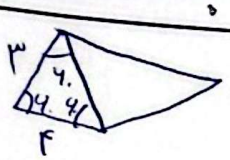
$\sin ۳۰=\frac{۱}{۲}=\frac{CH}{CB}=\frac{\sqrt{۲}}{۲\sqrt{۲}}$

$(\sqrt{۲})^{۲}+(HB)^{۲}=(۲\sqrt{۲})^{۲}\Rightarrow HB=\sqrt{۶}$

۵

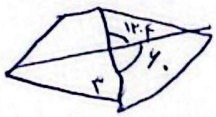
$x=y$ $\quad \frac{\frac{۱}{۲}\sin x\times ۴\times ۲}{\frac{۱}{۲}\times \sin y\times ۳\times ۹}=\frac{۸}{۱۸}=\frac{۴}{۹}$ ✓

(۲)



$\left(\frac{1}{2} \times \frac{\sqrt{3}}{2} \times 4 \times 4\right) 2 = \frac{12\sqrt{3}}{2} = 6\sqrt{3}$ ✓

(1) الف



$\left(\frac{1}{2} \times \frac{\sqrt{3}}{2} \times 4 \times 4\right) 3 = 12\sqrt{3}$

ب) $\frac{1}{2} \times 4 \times 6 \times \sin 120^\circ = 6\sqrt{3}$ ب

٦

(٠)

$m_{PQ} = \frac{6-2}{2-(-1)} = \frac{4}{3} \rightarrow \tan\theta$

$1 + \tan^2\theta = \frac{1}{\cos^2\theta} \rightarrow 1 + \frac{16}{9} = \frac{1}{\cos^2\theta} \rightarrow \cos^2\theta = \frac{9}{25} \xrightarrow[\cos\theta > 0]{\text{جذر}} \cos\theta = \frac{3}{5} = \frac{3\sqrt{5}}{5}$

٧

(٠)

$2y = 2x + 5 \rightarrow m = 1 \rightarrow \tan\theta = 1 \rightarrow \theta = 45^\circ \rightarrow y = mx + b \rightarrow m = \tan 120^\circ = -\sqrt{3}$

$\xrightarrow{(0, \frac{5}{2})} \frac{5}{2} = -\sqrt{3}(0) + b \rightarrow b = \frac{5}{2}$ $\quad mb = \frac{5}{2} \times (-\sqrt{3}) = \frac{-5\sqrt{3}}{2}$

٨

(٠)

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

$f(x) = \cot x \rightarrow f\left(\frac{5\pi}{6}\right) = \cot\left(\frac{5\pi}{6}\right) = -\sqrt{3}$

٩

(٠)

$\sin\left(\frac{17\pi}{2} + x\right) = \cos x$ ، $\cos(3\pi + x) = -\cos x$

$\cos\left(\frac{15\pi}{2} - x\right) = -\sin x$ ، $\sin(9\pi - x) = -\sin x$

$\rightarrow \frac{\cos x - \sin x}{-\cos x + \sin x} = -1$

١