نام و نام خانوادگی ......[illegible]...... پاسخنامه تشریحی تکلیف شماره ..۲۵.. کلاس ......دهم تجربی......

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الف) $\left(\frac{\sqrt{2}}{2}+\frac{-\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{2}+\frac{+\sqrt{3}}{2}\right) = \frac{2}{4}-\frac{3}{4} = \frac{-1}{4}$

ب) $\frac{1+3\times\left(\frac{1}{\sqrt{3}}\right)^2}{4\left(\frac{+\sqrt{3}}{2}\right)^2+2\left(\frac{-\sqrt{2}}{2}\right)^2} = \frac{2}{\cancel{4}\times\frac{3}{\cancel{4}}+\cancel{2}\times\frac{\cancel{2}}{\cancel{4}}} = \frac{2}{3+1} = \frac{2}{4} = \frac{1}{2}$

۲

الف) $\sin 45^\circ = \frac{AH}{BA} = \frac{AH}{\sqrt{6}} = \frac{\sqrt{2}}{2} \to AH = \frac{\sqrt{12}}{2} = \frac{2\sqrt{3}}{2} = \sqrt{3}$ / $HC = \sqrt{AC^2-AH^2} = \sqrt{\frac{12}{9}-3} = \cancel{\pm}3$

طول نمی‌تواند منفی باشد.

ب) $\tan 30^\circ = \frac{1}{\sqrt{3}} = \frac{AH}{\underset{9}{\cancel{HC}}} \to AH = \frac{9}{\sqrt{3}}\times\frac{\sqrt{3}}{\sqrt{3}} = \frac{9\sqrt{3}}{3} = 3\sqrt{3}$ / $\sin\beta = \frac{AH}{BA} = \frac{\cancel{3}\sqrt{3}}{\cancel{3}\sqrt{6}} = \sqrt{\frac{3}{6}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

$\sin 45^\circ = \frac{\sqrt{2}}{2}$ ✓

$\sin 135^\circ = \frac{\sqrt{2}}{2}$ ✗ → زاویه باید حاده باشد

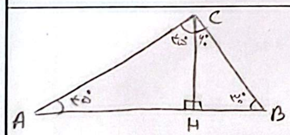
۳

الف) $\tan 60^\circ = \frac{\sqrt{3}}{1} = \frac{\overset{50\sqrt{3}}{AB}}{BD} \Rightarrow BD = \frac{50\cancel{\sqrt{3}}}{\cancel{\sqrt{3}}} = 50$ / $\tan 30^\circ = \frac{1}{\sqrt{3}} = \frac{AB}{BC} = \frac{\overset{50\sqrt{3}}{AB}}{\underset{50}{BD}+x} \to 150 = 50+x \to x = 100$

ب) $\tan 60^\circ = \sqrt{3} = \frac{BC}{\underset{2}{AB}} \to BC = 2\sqrt{3}$ / $DC = \sqrt{BD^2+BC^2} = \sqrt{1+12} = \sqrt{13}$

$\sin\alpha = \frac{DB}{DC} = \frac{1}{\sqrt{13}} = \frac{\sqrt{13}}{13}$

۴



$\sin 45^\circ = \frac{\sqrt{2}}{2} = \frac{CH}{AC}$ $\tan 30^\circ = \frac{1}{\sqrt{3}} = \frac{\overset{\sqrt{2}x}{\cancel{CH}}}{HB} \to HB = \sqrt{6}x$

$\cos 45^\circ = \frac{\sqrt{2}}{2} = \frac{AH}{\underset{2x}{AC}} \to AH = \sqrt{2}x$

$CH = \sqrt{2}x$

$AC = 2x$

$\left.\begin{array}{l} AH = \sqrt{2}x \\ HB = \sqrt{6}x \end{array}\right\} AH+HB = AB = (\sqrt{6}+\sqrt{2})x$

$\frac{AB}{AC} = \frac{(\sqrt{6}+\sqrt{2})\cancel{x}}{2\cancel{x}} = \frac{\sqrt{6}+\sqrt{2}}{2}$

۵

$\frac{S_{ABE}}{S_{BCD}} = \frac{\cancel{\frac{1}{2}}\times\cancel{\sin B}\times 2\times 4}{\cancel{\frac{1}{2}}\times\cancel{\sin B}\times 6\times 3} = \frac{8}{18} = \frac{4}{9}$

الف) $S = \sin 120^\circ \times 3 \times 4 = \frac{\sqrt{3}}{\cancel{2}} \times 3 \times \cancel{4}^{2} = 6\sqrt{3}$

ب) $S = \frac{1}{2} \times 3 \times 4 \times \sin(\underbrace{\cancel{180^\circ - 120^\circ}}_{60^\circ}) = \frac{1}{\cancel{2}} \times 3 \times \cancel{4}^{2} \times \frac{\sqrt{3}}{\cancel{2}} = 3\sqrt{3}$ ۶

$y = ax + b$ $\begin{cases} P \to -2 = +a \cancel{-b} \\ Q \to 4 = 3a + \cancel{b} \end{cases}$

$2 = 4a \to a = \frac{1}{2}$

$a = \tan\theta = \frac{1}{2}$

$\tan\theta = \frac{\sin\theta}{\cos\theta} = \frac{1}{2} \to 2\sin\theta = \cos\theta$

$\sin^2\theta + \cos^2\theta = 1 \to \sin^2\theta + 4\sin^2\theta = 1 \to 5\sin^2\theta = 1 \longrightarrow \sin^2\theta = \frac{1}{5}$ ۷

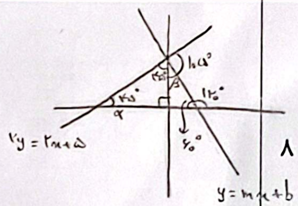
$\longrightarrow \cos^2\theta = \frac{4}{5} \to \cos\theta \begin{cases} \frac{-2}{\sqrt{5}} \times \\ \frac{2}{\sqrt{5}} \checkmark \end{cases}$

θ حاده است

$\Rightarrow \cos\theta = \frac{2}{\sqrt{5}} = \frac{2\sqrt{5}}{5}$ ✓

$2y = 2x + 5 \longrightarrow y = x + 2/5 \longrightarrow a = 1 \qquad \tan\alpha = 1 \to \alpha = 45^\circ$

$180^\circ - (\underbrace{\cancel{105^\circ + 45^\circ}}_{150^\circ}) = \beta = 30^\circ$



$m = \tan 120^\circ = -\sqrt{3} \qquad b = \frac{5}{2}$ ۸

$mb = \frac{-5\sqrt{3}}{2}$ ✓

$f(x) = \underbrace{\cos(\overset{\pi}{180} + x)}_{-\cos x} + \underbrace{\sin(\overset{\frac{\pi}{2}}{90} - x)}_{+\cos x} - \underbrace{\tan(\overset{\frac{3\pi}{2}}{270} + x)}_{-\cot x}$

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

$f(x) = \cancel{-\cos x} + \cancel{\cos x} + \cot x = \cot x$ ۹

$f(\frac{5\pi}{6}) = \cot\frac{5\pi}{6} = \cot 150^\circ = -\sqrt{3}$ ✓

$\frac{\sin(\overset{90^\circ}{\cancel{\frac{17}{2}}\pi} + x) + \cos(\overset{270^\circ}{\cancel{\frac{15\pi}{2}}} - x)}{\cos(\underset{180^\circ}{\cancel{3\pi}} + x) - \sin(\underset{360^\circ}{\cancel{6\pi}} - x)} = \frac{\cos x + (-\sin x)}{-\cos x - (-\sin x)} = \frac{\cancel{\cos x - \sin x}}{-(\cancel{\cos x - \sin x})} = -1$

۱۰ ✓