الینا صبرنانی

Date : / /

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

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

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

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

2. الف) $\sin 45 = \frac{\sqrt{2}}{2} = \frac{AH}{\sqrt{6}} \rightarrow AH = \sqrt{3}$

$(2\sqrt{3})^2 = (\sqrt{3})^2 + HC^2 \longrightarrow HC = 3$

ب) $\tan 30 = \frac{\sqrt{3}}{3} = \frac{x}{9} \longrightarrow x = 3\sqrt{3}$ $\frac{3\sqrt{3}}{3\sqrt{6}} = \frac{\sqrt{2}}{2} = \sin B \rightarrow B = 45$

۵.

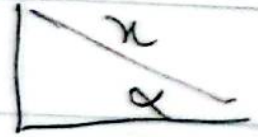
۳. الف) $\tan 60^\circ = \frac{50\sqrt{3}}{BD} = \sqrt{3} \rightarrow BD = 50$

$\tan 30^\circ = \frac{50\sqrt{3}}{BC} = \frac{\sqrt{3}}{3} \rightarrow BC = 150 \rightarrow \} \rightarrow x = 150 - 50 = 100$

~~$\hat{C} = 30^\circ \rightarrow \tan 30^\circ = \frac{\sqrt{3}}{2} = \frac{2}{BC} \rightarrow BC = \frac{4}{\sqrt{3}} = 2\sqrt{3}$~~

~~$\tan x = \frac{1}{BC} = \frac{1}{2\sqrt{2}} = \frac{\sqrt{3}}{4} \rightarrow \cot\alpha = \frac{4}{\sqrt{2}} = 2\sqrt{3}$~~

ب) $\hat{C} = 30^\circ \rightarrow \tan 30^\circ = \frac{\sqrt{2}}{2} = \frac{2}{BC} \rightarrow BC = 2\sqrt{3}$



$x^2 = 1 + 12 \rightarrow x = \sqrt{13} \Rightarrow \sin\alpha = \frac{1}{\sqrt{13}} = \frac{\sqrt{13}}{13}$

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٢. $\frac{b}{\sin B} = \frac{a}{\sin A} = \frac{c}{\sin C}$ $\quad \frac{AB}{\sin 105} = \frac{AC}{\sin 45}$

$\frac{AB}{AC} = \frac{\sin 105}{\sin 45} = 2\sin 105$ $\quad \sin 105 = \sin(45+60) = \sin 45\cos 60 + \sin 60\cos 45$

$= \frac{\sqrt{2}}{2} \times \frac{1}{2} + \frac{\sqrt{2}}{2} \times \frac{\sqrt{3}}{2} = \frac{\sqrt{2}+\sqrt{6}}{4}$

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

٥. $S = \frac{1}{2} ab \sin B$ $\quad \frac{2 \times 6 \times \frac{1}{2} \sin B}{\frac{1}{2} \times 4 \times 5 \times \sin B} = \frac{6}{9}$

(الزاوية)

$\rightarrow \left(\frac{5\sqrt{2}+5\sqrt{9}}{2}\right)$

۵. $S = \frac{1}{2} ab \sin\beta$ $\quad \frac{2\times 6\times \frac{1}{2}\sin\beta}{\frac{1}{2}\times 9\times 8\times \sin\beta} = \frac{6}{9}$

۶. الف)

$S = ab\sin\alpha$ $\quad 3\times 6\times \sin 30 = 12\times \frac{\sqrt{2}}{2} = 6\sqrt{2}$

ب) $S = \frac{ab\sin\alpha}{2} = \frac{6\sqrt{2}}{2} = 3\sqrt{2}$

۷. $\frac{OQ}{PQ} = \frac{6}{3\sqrt{5}} = \frac{2\sqrt{5}}{5}$ $\quad 14+6 = PQ = \sqrt{20}$

۹. $\cos((\pi+x)+\sin(\frac{\pi}{2}-x)-\tan(\frac{3\pi}{2}+x)$

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

$\pi - \frac{\pi}{4}$

$+\frac{\cos x}{\sin x}$

$f(\frac{3\pi}{4}) = -\sqrt{2}$

۱۰. $\frac{\sin(\frac{11\pi}{2}+x)+\cos(\frac{13\pi}{2}-x)}{\cos(3\pi+x)-\sin(\frac{5\pi}{2}-x)} = -1$

$\cos x \quad -\sin x$

$\frac{3\pi}{2}$ $\quad$ $\sin$

$-\cos x + \sin x$

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۸. $y = x + 2.5 \rightarrow \tilde{\omega} = \tan\alpha = 1 \rightarrow \alpha = 45^\circ$

$y = mx + b \quad \theta = -(90+45) + 180 = 45^\circ \rightarrow \alpha = 135^\circ$

$\tan 135^\circ = -\sqrt{2}$

$y = -\sqrt{2}x + b \xrightarrow{1^\circ} 2.5 \quad b = 2.5 \quad b_m = 2.5x - \sqrt{2}$