

ادین پورے

$$\frac{1 + (\frac{\sqrt{3}}{4} \times \frac{\sqrt{3}}{4})^2}{(\frac{\sqrt{3}}{4} \times \frac{\sqrt{3}}{4})^2 + (\frac{\sqrt{3}}{4} \times \frac{\sqrt{3}}{4})^2} = \frac{1 + (\frac{3}{16})^2}{(\frac{3}{16})^2 + (\frac{3}{16})^2} = \frac{1 + \frac{9}{256}}{\frac{9}{256} + \frac{9}{256}} = \frac{1 + \frac{9}{256}}{\frac{18}{256}} = \frac{265}{18} = \frac{53}{9}$$

(1)

الف) $AB = \sqrt{4} \Rightarrow B = 45^\circ \rightarrow A = 45^\circ \rightarrow \text{ضلع برابر ہوا} \rightarrow \frac{\sqrt{2}}{2} \times \sqrt{2} = \frac{\sqrt{2}}{2} \times \sqrt{2} = 1 = AH$
 $(\sqrt{2})^2 - (\sqrt{2})^2 = HC^2 \rightarrow 12 - 3 = 9 = HC^2 \rightarrow HC = 3$

(2)

ب) $\frac{a}{\sin A} = \frac{b}{\sin B} \rightarrow \frac{2\sqrt{2}}{\sin 45^\circ} = \frac{4\sqrt{2}}{\sin B} \rightarrow \sin B = \frac{1}{2} \rightarrow B = 30^\circ \text{ یا } 150^\circ$
 $\frac{c}{\sin C} = \frac{b}{\sin B} \rightarrow \frac{2\sqrt{2}}{\sin 90^\circ} = \frac{4\sqrt{2}}{\sin B} \rightarrow \sin B = \frac{1}{2} \rightarrow B = 30^\circ \text{ یا } 150^\circ$

الف) $\frac{a}{\sin A} = \frac{b}{\sin B} \rightarrow \frac{2\sqrt{2}}{\sin 45^\circ} = \frac{4\sqrt{2}}{\sin B} \rightarrow \sin B = \frac{1}{2} \rightarrow B = 30^\circ \text{ یا } 150^\circ$
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(3)

ب) $C = 30^\circ$
 $AC = 4$
 $BC = \sqrt{12} = 2\sqrt{3} \rightarrow DC^2 = BC^2 + BD^2 \rightarrow DC = \sqrt{12} = 2\sqrt{3}$
 $\frac{DC}{\sin B} = \frac{BD}{\sin A} \rightarrow \frac{2\sqrt{3}}{\sin 30^\circ} = \frac{BD}{\sin 45^\circ} \rightarrow BD = \frac{2\sqrt{3} \times \frac{\sqrt{2}}{2}}{\frac{1}{2}} = 2\sqrt{6}$

$\frac{AB}{\sin 100^\circ} = \frac{BC}{\sin 40^\circ} = \frac{CA}{\sin 20^\circ} \rightarrow CA \times \sin 100^\circ = AB \times \sin 20^\circ \rightarrow \frac{CA \times \sin 100^\circ}{AC} = \frac{AB \times \sin 20^\circ}{AB} \rightarrow \sin 100^\circ = \frac{AB \times \sin 20^\circ}{AB} \rightarrow \sin 100^\circ = \frac{2 + \sqrt{3}}{4}$

(4)

$S_{ABE} = \frac{1}{2} \times EB \times BA \times \sin B$
 $S_{BCD} = \frac{1}{2} \times BC \times BD \times \sin B$
 $BA = BD$

(5)

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

(6)

$C = \sqrt{13}$
 $\frac{a}{\sin A} = \frac{b}{\sin B} \rightarrow \frac{4}{\sin 90^\circ} = \frac{2}{\sin B} \rightarrow \sin B = \frac{1}{2} \rightarrow B = 30^\circ \text{ یا } 150^\circ$
 $a = \tan \theta = \frac{4-2}{3+1} = \frac{1}{2} \Rightarrow b + \frac{3}{2} = 4 \Rightarrow b = \frac{5}{2}$
 $\cos \theta = \frac{1}{\sqrt{13}} = \frac{2}{\sqrt{13}} \times \frac{\sqrt{13}}{\sqrt{13}} = \frac{2\sqrt{13}}{13}$

(7)

$y = mx + b \rightarrow y = m + \frac{a}{p} \rightarrow y = 0 + \frac{a}{p} \rightarrow y = \frac{a}{p} \mid 0 = m + \frac{a}{p} \rightarrow m = -\frac{a}{p}$
 $y = mx + b$
 $0 = \frac{a}{p}m + b \rightarrow -b = \frac{a}{p}m \rightarrow b = -\frac{a}{p}m$
 $\frac{a}{p}m = -\frac{a}{p} \rightarrow m = -\frac{a}{p} \times \frac{p}{a} = -1$
 $mb = -\frac{a}{p} \times \frac{a}{p} = -\frac{a^2}{p^2}$

(8)

$$f(n) = \cos(\pi + n) + \sin\left(\frac{\pi}{4} - n\right) - \tan\left(\frac{5\pi}{4} + n\right) = -\cos n + \cos n + \cot n = \cot n \Rightarrow \cot 10^\circ = -\sqrt{11}$$

$$* \frac{9\pi}{4} = 10^\circ$$

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$$\frac{\sin\left(\frac{10\pi}{4} + n\right) + \cos\left(\frac{10\pi}{4} - n\right)}{\cos(4\pi + n) - \sin(4\pi + n)} = \frac{\sin\left(\frac{\pi}{4} + 1\pi + n\right) + \cos\left(\frac{\pi}{4} + 4\pi - n\right)}{\cos(4\pi + n) - \sin(4\pi + n)} = \frac{\cos n - \sin n}{-\cos n + \sin n} = \frac{-(-\cos n + \sin n)}{-\cos n + \sin n} = -1$$

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