

الف) $\frac{2\sqrt{2}}{5} \times \frac{2}{5} = \frac{4\sqrt{2}}{25} \rightarrow 27^\circ = \frac{4\sqrt{2}}{25} \text{ Rad}$

ب) $\frac{2\sqrt{2}}{5} \times \frac{2}{5} = \frac{4\sqrt{2}}{25} \rightarrow 125^\circ = \frac{4\sqrt{2}}{25} \text{ Rad}$

ج) $\frac{2\sqrt{2}}{5} \times \frac{2}{5} = 150^\circ \rightarrow \frac{4\sqrt{2}}{25} = 150^\circ$

د) $\frac{2\sqrt{2}}{5} \times \frac{2}{5} = 90^\circ \rightarrow \frac{4\sqrt{2}}{25} \text{ Rad} = 90^\circ$

✓ (ب)

$10d^\circ + \frac{120d}{4}^\circ + \frac{4\sqrt{2}}{25} \text{ Rad} = 180^\circ$

برای تبدیل گراد به رجب باید گراد را در $\frac{\pi}{180}$ و برای تبدیل رجب به گراد باید رجب را در $\frac{180}{\pi}$ ضرب کرد.

$\frac{120d}{4}^\circ = \frac{30d}{1}^\circ$ $\frac{4\sqrt{2}}{25} \times \frac{180}{\pi} = 12,5d^\circ$

$22,5d^\circ + 12,5d^\circ + 10d^\circ = 55d^\circ = 180^\circ$

$\frac{4\sqrt{2}}{25} \times \frac{180}{\pi} = \frac{18 \cdot 4}{25} = 22,5d^\circ \Rightarrow d^\circ = 4^\circ$

✓ (ب)

ان) $\frac{1}{2} \times \frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2} \times \frac{1}{2} - 1 + 2 = 1$

ب) $\frac{\frac{1}{2} + 1 + 2}{\sqrt{2} - \frac{1}{\sqrt{2}}} = \frac{\frac{5}{2}}{\frac{\sqrt{2}-1}{\sqrt{2}}} = \frac{5\sqrt{2}}{2(\sqrt{2}-1)} = \frac{5\sqrt{2}}{2}$

✓ (ب)

$-\sin 30^\circ \cos 40^\circ + \cos 30^\circ \sin 40^\circ = \sin^2 \theta + \cos^2 \theta = 1$

$-\frac{1}{2} \times \frac{1}{2} + \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} = \frac{2}{4} = \sin^2 \theta \Rightarrow \sin \theta = \frac{\sqrt{2}}{2} \Rightarrow \theta = 45^\circ \Rightarrow \sin \theta = 1$

✓ (ب)

$\frac{2 + \cos 30^\circ (1 - \tan^2 30^\circ)}{1 - \cos 30^\circ} = \tan \theta \rightarrow 2 \times \frac{1}{\sqrt{3}} \left(1 - \frac{1}{3}\right) = 2 \times \frac{1}{\sqrt{3}} = \frac{2}{\sqrt{3}}$

$\tan \theta = \frac{2}{\sqrt{3}} \Rightarrow \theta = 40^\circ = \frac{\pi}{4}$

زاویه حاده است

✓ (ب)

$9 \times \frac{\pi}{180}$

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

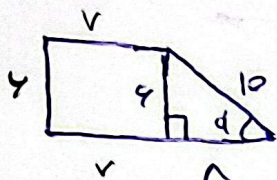
$$\cot \theta = 2$$

$$\frac{\sin \theta - \cos \theta}{\sin \theta + \cos \theta} = 1$$

$$\frac{1}{\cos \theta} = 1 + \tan \theta = 1 + \frac{1}{2} = \frac{3}{2} \Rightarrow \cos \theta = \frac{2}{3}$$

$$\frac{1}{\sin \theta} = 1 + \cot \theta = 1 + 2 = 3 \Rightarrow \sin \theta = \frac{1}{3}$$

$$\sin \theta + \cos \theta = \frac{1}{3} + \frac{2}{3} = 1$$



$$1 + 2 + 1 + 2 = 6$$

(P) ✓

$$\sin 45^\circ = \frac{1}{\sqrt{2}} \Rightarrow BD = \frac{1}{\sqrt{2}}$$

$$\cos 45^\circ = \frac{1}{\sqrt{2}} \Rightarrow AB = \frac{1}{\sqrt{2}}$$

$$\cot 45^\circ = 1 \Rightarrow BC = 1$$

$$CD = \frac{1}{\sqrt{2}} - 1 = \frac{1 - \sqrt{2}}{\sqrt{2}}$$

(P) ✓



الف) ناحیه بی سر
ب) ناحیه بی دم

(P) ✓

$$\tan x = \frac{1}{2} \Rightarrow \sin^2 x = \frac{1}{1 + \cot^2 x} = \frac{1}{1 + 4} = \frac{1}{5} \Rightarrow \sin x = \frac{1}{\sqrt{5}}$$

(P) ✓