

$$\text{الف)} \quad 27 \times \frac{\pi}{180} = \frac{27\pi}{180} = \frac{9\pi}{4} = \frac{3\pi}{2}$$

$$\text{ب)} \quad 125 \times \frac{\pi}{180} = \frac{125\pi}{36}$$

$$\text{ج)} \quad \frac{5\pi}{12} \times \frac{180}{\pi} = 75^\circ$$

$$\text{د)} \quad \frac{4\pi}{9} \times \frac{180}{\pi} = 80^\circ$$

(۲) ✓

$$\frac{\frac{125a}{9}}{\frac{200}{1}} = \frac{D}{180} \Rightarrow D = \frac{\frac{125a}{9} \times 180}{200} = \frac{125a}{1} = 12,5a^\circ$$

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

$$45a = 180 \Rightarrow a = 4^\circ$$

$$\frac{9\pi}{4} \times \frac{180}{\pi} = 22,5a$$

(۲) ✓

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

$$\text{ب)} \quad \frac{\frac{1}{\sqrt{2}} + 1 + 2}{\frac{\sqrt{2}}{2} - \frac{1}{\sqrt{2}}} = \frac{\frac{3}{\sqrt{2}}}{\frac{\sqrt{2}-1}{2}} = \frac{\frac{3}{\sqrt{2}}}{\frac{\sqrt{2}-1}{2}} = \frac{3}{\sqrt{2}} \times \frac{2}{\sqrt{2}-1} = \frac{12}{2-\sqrt{2}}$$

(1, 1, 1)

✓

$$\left(\frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} \right) + \left(\frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} \right) = \sin \theta \Rightarrow \sin \theta = \frac{1}{2} + \frac{1}{2} = 1 \Rightarrow \sin \theta = \frac{\sqrt{2}}{2}$$

$$\sin \theta = \frac{1}{\sqrt{2}}, \theta < 90^\circ \Rightarrow \theta = 45^\circ \rightarrow \tan 45^\circ = 1$$

$$\tan 45^\circ = \frac{1}{1}$$

(1, 1, 1)

✓

$$\frac{2 \tan 30^\circ (1 - \tan^2 30^\circ)}{(1 - \cot^2 45^\circ)^2} = \frac{2 \tan 30^\circ}{1 - \cot^2 45^\circ} = \frac{\frac{1}{\sqrt{3}}}{1 - 1} = \frac{1}{\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{1}{\sqrt{3}} \Rightarrow \tan \theta = \frac{1}{\sqrt{3}} \Rightarrow \tan \theta = \frac{1}{\sqrt{3}}, \theta < 90^\circ$$

$$\frac{1}{\sqrt{3}} = \tan \theta \Rightarrow \theta = 30^\circ$$

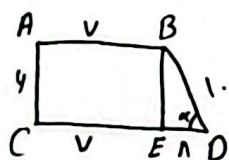
(1, 1, 1)

$$\tan = \frac{\sin}{\cos} \Rightarrow \sin = \tan \cos$$

$$\frac{3\sin\theta - \cos\theta}{\sin\theta - \varepsilon\cos\theta} = \frac{3\tan\theta\cos\theta - \cos\theta}{\tan\theta\cos\theta - \varepsilon\cos\theta} = \frac{1\varepsilon\cos}{\cos} = 1\varepsilon$$

4

(2) ✓



$$\sin\alpha = \frac{4}{1} \Rightarrow \sin = 1.0$$

$$bd = 1.$$

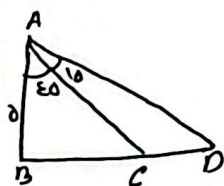
$$Ed^2 = 1.0^2 - 4^2 \Rightarrow Ed = 1$$

$$\text{محيط} = (2 \times 4) + 4 + 1 + 1 = 10$$

(2) ✓

5

$$BD \Rightarrow \sin = \frac{\text{مقابل}}{\text{وتر}} , \sin 40^\circ = \frac{\sqrt{3}}{2} \Rightarrow \frac{BD}{AD} = \frac{\sqrt{3}}{2} \Rightarrow BD = 5\sqrt{3} \quad AB = 5$$



$$BC \Rightarrow \tan = \frac{\text{مقابل}}{\text{جانب مجاور}} = \frac{BC}{AB} \Rightarrow \tan 40^\circ = 1 \Rightarrow BC = AB$$

$$BC = 5 \Rightarrow DC = BD - BC = 5\sqrt{3} - 5$$

(2) ✓

8

الف) $\cos \uparrow \Rightarrow$ 3, 4 , $\sin \downarrow \Rightarrow$ 2, 3 $\Rightarrow$ 3

ب) $\sin \downarrow \Rightarrow$ 3, 2 , $\cos \downarrow \Rightarrow$ 2, 1 $\Rightarrow$ 2

(2) ✓

9

$$\tan\alpha = \frac{1}{3} \Rightarrow \frac{\sin}{\cos} = \frac{1}{3} \Rightarrow \cos = 3\sin$$

$$\sin^2 + \cos^2 = 1$$

$$\sin^2 + (3\sin)^2 = 1$$

$$1. \sin^2 = 1 \Rightarrow \sin^2 = \frac{1}{1} \Rightarrow \sin = \frac{1}{1} = \frac{\sqrt{1}}{1}$$

در حالتی که sin و cos مثبت است

(1.1) ✓

10