

$$\text{أ)} \quad 2V \times \frac{TV}{1\lambda_0} = \frac{2TV}{\lambda_0}$$

$$\text{ب)} \quad 148 \times \frac{TV}{1\lambda_0} = \frac{2TV}{\lambda_0}$$

$$\text{ج)} \quad \frac{\delta}{12} \times 1\lambda_0 = 78^\circ$$

$$\text{د)} \quad \frac{8}{9} \times 1\lambda_0 = 1\lambda_0$$

$$\frac{aTV}{\lambda} = \frac{a}{\lambda} \times 1\lambda_0 = 22/80^\circ$$

$$\frac{148a}{9} = \frac{9}{10} \times \frac{148a}{9} = 148a$$

$$22a = 1\lambda_0 \Rightarrow a = 4$$

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

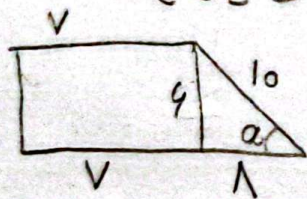
$$\text{ب)} \quad \frac{\frac{1}{\sqrt{2}} + 1 + \sqrt{2}}{\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}} = \frac{1\sqrt{2}}{2\sqrt{2}}$$

$$\sin^2 \theta = \frac{1}{2} + \frac{\sqrt{2}}{2} = \frac{1}{2} \Rightarrow \sin \theta = \pm \frac{\sqrt{2}}{2} \Rightarrow \tan \theta = \pm 1$$

$$\tan \theta = \frac{\frac{2}{\sqrt{2}} \times \frac{2}{\sqrt{2}}}{\frac{2}{9}} = \frac{\frac{2\sqrt{2}}{9}}{\frac{2}{9}} = \frac{2\sqrt{2}}{2} = \frac{1}{\sqrt{2}} \Rightarrow \theta = 30^\circ \quad \theta = 18^\circ \times$$

$$\frac{20}{1\lambda_0} \times TV = \frac{TV}{9}$$

$$\frac{10 \cos \theta - \cos \theta}{\cos \theta} = 18$$



$$\rightarrow D = 2\lambda$$

$$VD + AB^2 = 100$$

$$\sin 40^\circ = \frac{\sqrt{2}}{2} \Rightarrow BD = 8\sqrt{2} \Rightarrow AB = 8 \xrightarrow{\sin 40^\circ = 1} BC = 8$$

$$DC = BD - BC = 8\sqrt{2} - 8$$

$$\Rightarrow \cos 60^\circ \quad \Rightarrow \cos 60^\circ \quad \Rightarrow \cos 60^\circ$$

$$1 + \left(\frac{1}{\sqrt{2}}\right)^2 = \frac{1}{\cos^2 \alpha} \Rightarrow \cos^2 \alpha = \frac{9}{10} \xrightarrow{\cos 30^\circ} \cos \alpha = \frac{3}{\sqrt{10}}$$

$$\frac{9}{10} + \sin^2 \alpha = 1 \rightarrow \sin^2 \alpha = \frac{1}{10} \xrightarrow{\sin 30^\circ} \sin \alpha = \frac{1}{\sqrt{10}}$$