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$$a) \frac{2V}{1A} = \frac{X}{\pi} \Rightarrow X = \frac{2\pi V}{1} \checkmark$$

$$b) \frac{\omega \pi}{12} = \frac{X}{1A} \Rightarrow X = V\omega \checkmark$$

$$c) \frac{12\omega}{1A} = \frac{X}{\pi} \Rightarrow X = \frac{12\omega \pi}{1} \checkmark$$

$$d) \frac{\frac{\pi}{9}}{\pi} = \frac{X}{1A} \Rightarrow X = 1A \checkmark$$

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$$\frac{12\omega a}{9} = \frac{\frac{\omega}{12} a}{\frac{\pi}{9}}$$

$$\omega a + \frac{\pi \omega}{12} a + 12a = 12 \checkmark$$

$$\frac{a\pi}{12} = \frac{\pi \omega}{12} a$$

$$\Rightarrow \frac{\omega + 9 + 12}{12} a = 12 \checkmark$$

$$\Rightarrow a = 12 \checkmark$$

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

$$b) \frac{\left(\frac{\sqrt{2}}{\sqrt{2}}\right)^2 + (1)^2 + (\sqrt{2})^2}{\sqrt{2} - \frac{\sqrt{2}}{\sqrt{2}}} = \frac{\frac{2}{2} + 1 + 2}{\frac{2\sqrt{2}}{\sqrt{2}}} = \frac{3}{2\sqrt{2}} = \frac{1}{\sqrt{2}} \checkmark$$

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

$$\tan \theta = \tan 45^\circ = 1 \checkmark$$

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$$\frac{2 \times \frac{\sqrt{2}}{\sqrt{2}} \left(1 - \frac{2}{9}\right)}{\left(1 - \frac{2}{9}\right)^2} = \frac{2 \times \frac{\sqrt{2}}{\sqrt{2}} \times \frac{2}{9}}{\frac{4}{9}} = \sqrt{2} = \tan \theta \Rightarrow \theta = 45^\circ = \frac{\pi}{4} \checkmark$$

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$$\tan \theta = \omega \rightarrow \frac{1}{\cos^2 \theta} = 1 + \tan^2 \theta = 1 + \omega^2 \Rightarrow \cos^2 \theta = \frac{1}{1 + \omega^2} \Rightarrow \cos \theta = \pm \frac{1}{\sqrt{1 + \omega^2}}$$

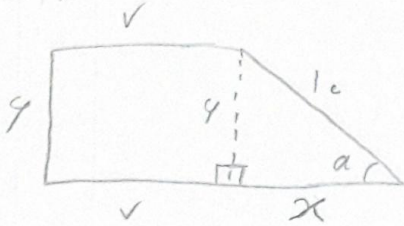
$$\sin^2 \theta = 1 - \cos^2 \theta \rightarrow 1 - \frac{1}{1 + \omega^2} = \frac{\omega^2}{1 + \omega^2} \Rightarrow \sin \theta = \pm \frac{\omega}{\sqrt{1 + \omega^2}}$$

$$\frac{\frac{1\omega}{\sqrt{1+\omega^2}} - \frac{1}{\sqrt{1+\omega^2}}}{\frac{\omega}{\sqrt{1+\omega^2}} - \frac{\omega}{\sqrt{1+\omega^2}}} = \frac{\frac{1\omega}{\sqrt{1+\omega^2}}}{\frac{1}{\sqrt{1+\omega^2}}} = 1\omega \quad \checkmark$$

$$\left\{ \frac{-\frac{1\omega}{\sqrt{1+\omega^2}} + \frac{1}{\sqrt{1+\omega^2}}}{-\frac{\omega}{\sqrt{1+\omega^2}} + \frac{\omega}{\sqrt{1+\omega^2}}} = \frac{-\frac{1\omega}{\sqrt{1+\omega^2}}}{\frac{1}{\sqrt{1+\omega^2}}} = -1\omega \quad \checkmark \right.$$

$$\sin = \frac{9}{10} = \frac{\text{مقابل}}{\text{مدر}}$$

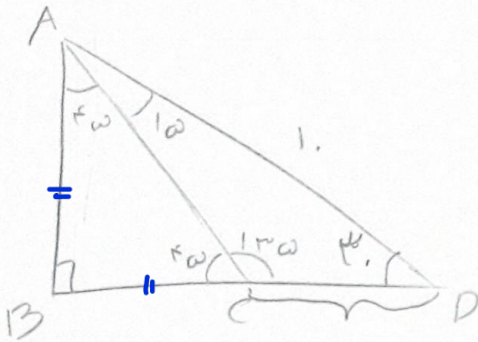
$$10^2 = 9^2 + x^2 \Rightarrow 100 - 81 = x^2 \Rightarrow x^2 = 19 \Rightarrow x = \sqrt{19}$$



$$10 + 9 + 9 + \sqrt{19} = 38 \quad \checkmark$$

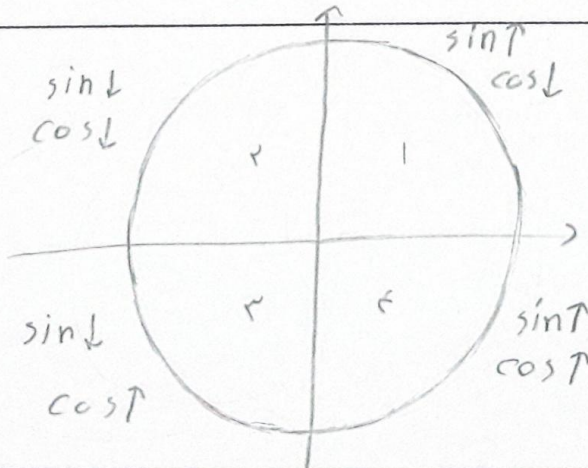
$$\cos 30^\circ = \frac{\sqrt{3}}{2} = \frac{\text{مقابل}}{\text{مدر}} = \frac{x}{10}$$

$$\Rightarrow x = 5\sqrt{3} = BD$$



$$\hat{A} = 60^\circ \rightarrow \frac{AB}{AD} = \cos 60^\circ = \frac{1}{2} \rightarrow AB = 5$$

$$AB = BC = 5 \quad CD = 5\sqrt{3} - 5 = 5(\sqrt{3} - 1)$$



الف (Alfa) ناصبه 3

ب (Beta) ناصبه 2

$$\frac{1}{\cos^2} = 1 + \tan^2$$

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

$$\sin^2 = 1 - \cos^2 \Rightarrow \sin^2 = 1 - \frac{9}{10} = \frac{1}{10} \Rightarrow \sin = \pm \frac{1}{\sqrt{10}} \quad \checkmark$$