

مردقیقه در ۱۲
۱۲/۱۲/۱۲

$$\Delta \phi \times \phi = 3240$$

$$3 \times 30 = 90$$

$$\Delta \phi \times \phi = 225$$

$$90 + 225 = 315$$

$$|3240 - 1125| = 2115$$

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$$|30H - \Delta \phi M| = (30 \times 30) - (30 \times 30) = 0$$

اگر با دقت ۱۰

(الف)

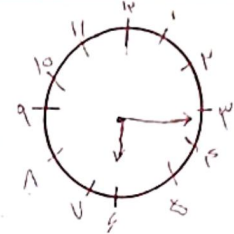
(ب)

$$340 - 225 = 115$$

$$11 \times 0.5 = 5.5 \rightarrow 110 + 90 = 200$$

$$11 \times 6 = 66 \rightarrow 110$$

$$|119 - 101| = 18$$



(الف)

(ب)

(ج)

$$|30H - \Delta \phi M| = |(30 \times 6) - (30 \times 11)| = 180 - 99 = 81$$

$$\frac{1}{4} \times \frac{12}{5} \times \left(\frac{1}{2}\right)^2 = \frac{9 \times 12}{12} = \frac{12}{5}$$

$$\frac{1}{4} \times 12 \leftarrow \text{مساحت قطاع}$$

$$\frac{12}{5} \times \frac{1}{2} = \frac{12}{5} \times \frac{1}{2} = \frac{12}{5}$$

$$12 \times 5 + 6 \times 12 \leftarrow \text{مساحت قطاع}$$

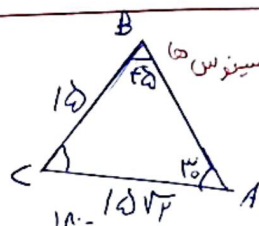
$$a \times b \times \sin \theta \times \frac{1}{2} = \frac{1}{2} \times a \times b \times \frac{\sqrt{2}}{2} = 10\sqrt{2}$$

(الف)

(ب)

$$CB = \sqrt{AB^2 + AC^2 - 2(AB \times AC) \cos \theta} = \sqrt{25 + 49 - 2 \times 5 \times 7 \times \frac{1}{2}} = \sqrt{25 + 49 - 35} = \sqrt{39} = 6.24$$

$$V + 1 + 0 = 1$$



قانون سینوس

$$\frac{CB}{\sin A} = \frac{CA}{\sin B}$$

$$\frac{10}{\frac{1}{2}} = \frac{10\sqrt{2}}{2}$$

$$\frac{10\sqrt{2} \times \frac{1}{2}}{10} = \frac{\sqrt{2}}{2}$$

$$\sin B = \frac{\sqrt{2}}{2} \Rightarrow B = 45$$

$$C = (180 - 45 - 45) = 90 \Rightarrow \angle C = 90$$

$$\rightarrow \angle C = 90, 100 \times \frac{12}{11} = \frac{1200}{11}$$

$$\frac{\tan(\theta - \phi) + \tan(\theta + \phi)}{\tan(\theta - \phi) - \tan(\theta + \phi)} = \frac{1 + \tan \theta}{1 - \tan \theta} = -1$$

(الف)

سوال ۷

$$\frac{x}{y} \times \frac{y}{x} = 1 \Rightarrow \frac{y + \tan(10^\circ) + \tan(10^\circ)}{y + \tan(10^\circ) - \tan(10^\circ)} = \frac{y \cot(10^\circ) - 10 \cot(10^\circ)}{-y \cot(10^\circ) - \cot(10^\circ)} = \frac{y}{-y} = -1$$

$$\cot(10^\circ) = \frac{1}{\tan(10^\circ)}$$

$$\frac{1}{y} = -\frac{1}{y \tan(10^\circ) + 1}$$

سوال ۸

$$\frac{(\sin^2 x + \cos^2 x) + (\sin^2 x - \cos^2 x)}{\sin^2 x - \cos^2 x} = 1 \Rightarrow (\sin^2 x + \cos^2 x + \sin^2 x - \cos^2 x) + (\sin^2 x - \cos^2 x) = 1$$

$$= 1 \Rightarrow \frac{2 \sin^2 x}{\sin^2 x - \cos^2 x} = 1 \Rightarrow \sin^2 x - \cos^2 x = 2 \sin^2 x$$

$$\sin^2 x - \cos^2 x = (\sin^2 x - (1 - \sin^2 x)) = 2 \sin^2 x - 1$$

$$2 \sin^2 x - 1 = 2 \sin^2 x \Rightarrow \sin^2 x = \frac{1}{2} \Rightarrow \cos^2 x = 1 - \frac{1}{2} = \frac{1}{2} \Rightarrow \tan^2 x = \frac{\frac{1}{2}}{\frac{1}{2}} = 1 \Rightarrow \tan x = \pm 1$$

سوال ۹

$$\frac{\sin^2 x - 2(1 - \sin^2 x) + 1}{\sin^2 x + 2(1 - \sin^2 x) - 1} = \frac{\sin^2 x - 2 + 2 \sin^2 x + 1}{\sin^2 x + 2 - 2 \sin^2 x - 1} = \frac{3 \sin^2 x - 1}{1 - \sin^2 x}$$

$$3 \sin^2 x - 1 = 2(1 - \sin^2 x) \Rightarrow 3 \sin^2 x - 1 = 2 - 2 \sin^2 x \Rightarrow 5 \sin^2 x = 3 \Rightarrow \sin^2 x = \frac{3}{5} \Rightarrow \tan^2 x = \frac{\frac{3}{5}}{\frac{2}{5}} = \frac{3}{2} \Rightarrow \tan x = \pm \sqrt{\frac{3}{2}}$$

سوال ۱۰

الف) $\cos 4\alpha = \cos^2 \alpha - \sin^2 \alpha \Rightarrow \frac{\sqrt{2}}{2} = \cos^2 \alpha - \sin^2 \alpha$

$$\frac{\sqrt{2}}{2} + 1 = \cos^2 \alpha \Rightarrow \cos^2 \alpha = \frac{1 + \sqrt{2}}{2} \Rightarrow \cos \alpha = \pm \sqrt{\frac{1 + \sqrt{2}}{2}}$$

ب) $\sin 4\alpha = 2 \sin 2\alpha \cos 2\alpha = 2 \sin \alpha \cos \alpha (\cos^2 \alpha - \sin^2 \alpha) = 2 \sin \alpha \cos \alpha (\cos^2 \alpha - (1 - \cos^2 \alpha)) = 2 \sin \alpha \cos \alpha (2 \cos^2 \alpha - 1)$