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$$\frac{\sin(10\omega) + k \cos(14\omega)}{\cos(14\omega) + r \sin(14\omega)} = r \Rightarrow \frac{\cos 10\omega + k \sin 10\omega}{-\cos 10\omega - r \sin 10\omega} = r \Rightarrow \cos 10\omega - k \sin 10\omega = -r \cos 10\omega - r \sin 10\omega$$

$$\frac{\sin 10\omega}{\cos 10\omega} = \frac{1}{r}$$

$$\frac{C1A - K S1A}{-C1A - r S1A} \xrightarrow{+C1A}$$

$$\Rightarrow r \cos 10\omega - \sin 10\omega (k + r) = 0$$

$$\Rightarrow \frac{\sin 10\omega}{\cos 10\omega} = \frac{r}{k + r} = \frac{1}{r}$$

1, 8

$$\frac{1 - \frac{k}{r}}{1 - \frac{1}{r}} \cdot r \rightarrow 1 - \frac{k}{r} = -r - \frac{1}{r} \rightarrow -\frac{k}{r} = -\frac{r+1}{r} \rightarrow k = r+1 \Rightarrow k + r = 14 \Rightarrow \boxed{k = 10}$$

$$\frac{1 - \cos \gamma}{1 + \cos \gamma} = r \Rightarrow r + r \cos \gamma = 1 - \cos \gamma \Rightarrow \cos \gamma = -\frac{1}{r} \Rightarrow \cos^2 \gamma + \sin^2 \gamma = 1 \Rightarrow \frac{1}{r^2} + \sin^2 \gamma = 1$$

$$\Rightarrow \sin \gamma = \pm \frac{\sqrt{r^2 - 1}}{r}$$

$$\frac{1}{\tan^2 \gamma}$$

$$\frac{\tan(\frac{\pi}{r} - \gamma) - \cot(\pi - \gamma)}{\cot(\frac{\pi}{r} - \gamma) + r \tan(\pi - \gamma)} = \frac{r \cot \gamma}{-r + \tan \gamma} = \frac{r}{-r + \frac{1}{\tan \gamma}} = \frac{r \tan \gamma}{-r \tan \gamma + 1} = \frac{r \sqrt{r^2 - 1}}{r}$$

1, 0

$$10.8^\circ = \frac{3\pi}{\omega} \quad A \text{ شعاع دایره} = a \quad \left\{ \begin{array}{l} \frac{3\pi}{\omega} a = \frac{4\pi}{10} b \Rightarrow a = \frac{4}{3} b \end{array} \right.$$

$$\frac{A \text{ مساحت}}{B \text{ مساحت}} = \frac{\pi a^2}{\pi b^2} = \frac{(\frac{4}{3}b)^2}{b^2} = \boxed{\frac{16}{9}}$$

$$2A = LB \rightarrow \frac{1.1\pi}{1.1} \times r_A = \frac{4\pi}{1} \times r_B \rightarrow r_A = \frac{4}{3} r_B$$

$$\frac{S_A}{S_B} = \left(\frac{r_A}{r_B}\right)^2 = \frac{16}{9}$$

$$\frac{1}{r} BC \cdot AC \cdot \sin C = \sqrt{3}$$

$$\frac{1}{AB} = \tan \gamma = \frac{AB}{AC} = \sqrt{3}$$

$$\frac{1}{r} \times \sqrt{3} \times BC = \sqrt{3} \Rightarrow BC = r \Rightarrow DC = 1$$

دقت کن !!

1, 1/2

$$\sin C = r \sin C \cos C = \frac{r}{\sqrt{3}} \times \frac{r}{\sqrt{3}} = \frac{r^2}{3}$$

$$BC^2 + AB^2 = AC^2 \Rightarrow r^2 + 3 = AC^2 \Rightarrow AC = \sqrt{r^2 + 3} \Rightarrow \sin C = \frac{\sqrt{3}}{\sqrt{r^2 + 3}} \Rightarrow \cos C = \frac{r}{\sqrt{r^2 + 3}}$$

$$\left. \begin{array}{l} MN = \sqrt{r} \\ AM = \sqrt{13} \\ AN = \sqrt{13} \end{array} \right\} \text{میانگین}$$

$$(MN)^2 = (AM)^2 + (AN)^2 - 2 \cdot AM \cdot AN \cdot \cos \theta$$

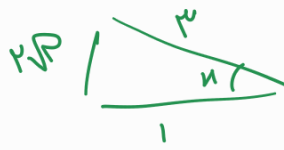
$$\Rightarrow r = 13 - 2 \cdot 13 \cos \theta \Rightarrow 26 \cos \theta = 12 \Rightarrow \cos \theta = \frac{12}{13}$$

$$\cos^2 \theta + \sin^2 \theta = 1 \Rightarrow \sin^2 \theta = \frac{144}{169} - \frac{144}{169} = \frac{25}{169} \Rightarrow \sin \theta = \frac{5}{13}$$

$$1 - \cos n = r + r \cos n \rightarrow \cos n = -\frac{1}{r}$$

سوال ۷

$$\frac{\cot n + \cot n}{\tan n - r \tan n} = \frac{r \cot n}{-\tan n} = -r \cot n$$


 $\rightarrow \cot n = -\frac{1}{r} \rightarrow -r \cot n = -r \times \frac{1}{r} = -\frac{1}{2}$