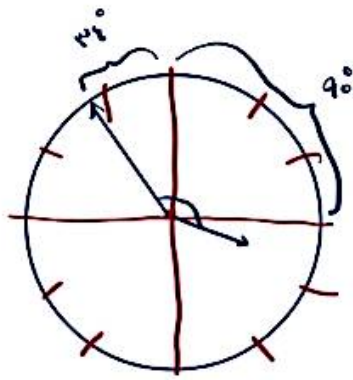




$$3:5 \rightarrow \frac{3}{5} = 0.6$$

$$3:9:17 \rightarrow 153$$

☆ 19 آفرین

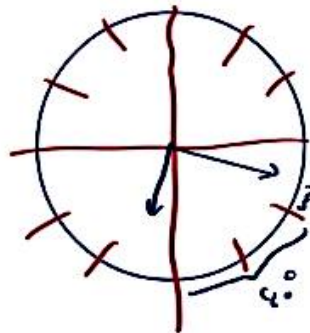
سوال 1

ازین نوعی

$$\alpha = |0.5M - 0.5H|$$

$$\frac{11}{2} \times \frac{11}{2} - 3 \times 3 = 297 - 9 = 288$$

$$\frac{288}{192} = 1.5$$



$$4:11 \rightarrow \frac{4}{11} = 0.36$$

$$12:4 \rightarrow 12 + 90 + 9 = 111$$

$$\alpha = |0.5M - 0.5H| = \left| \frac{11}{2} \times \frac{11}{2} - 3 \times 3 \right| = |288 - 9| = 279$$

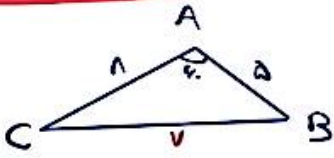
سوال 2

$$S = \frac{\alpha}{r} R^2 = \frac{\pi}{4} \times 9 = \frac{\pi}{12} \times 9 = \frac{\pi}{4} \times 3 = \frac{3\pi}{4}$$

$$|AB| = \alpha R = \frac{\pi}{4} \times 3 = \frac{3\pi}{4}$$

$$L = AB + OB + OA = 3 + 3 + \frac{3\pi}{4} = 6 + \frac{3\pi}{4}$$

سوال 3

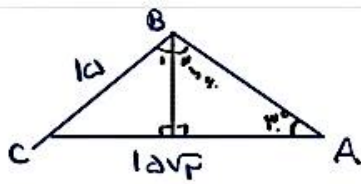


سوال 4

$$S_{ABC} = \frac{1}{2} AC \times AB \times \sin \hat{A} = \frac{1}{2} \times 1 \times 2 \times \sin 90^\circ = 1$$

$$CB = \sqrt{(AC)^2 + (AB)^2 - 2(AC)(AB)(\cos 90^\circ)} = \sqrt{1^2 + 2^2 - 0} = \sqrt{5} = \sqrt{5}$$

$$P_{ABC} = 1 + 2 + 3 = 6$$



سوال ۵ :

$$\hat{B} + \hat{C} = 150^\circ$$

$$\frac{1}{\sin B} + \frac{1}{\sin C} = \frac{1}{\sin A}$$

$$A = 15^\circ$$

$$\frac{BC}{\sin A} = \frac{CA}{\sin B} \rightarrow \frac{10}{\sin 15^\circ} = \frac{12\sqrt{2}}{\sin B} \rightarrow \sin B = \frac{12\sqrt{2} \sin 15^\circ}{10}$$

$$\sin B = \frac{12\sqrt{2} \sin 15^\circ}{10}$$

$$B = 45^\circ \quad C = 115^\circ$$

$$\frac{\tan(\pi - \alpha) + r \tan(\pi + \alpha)}{\tan(r\pi - \alpha) - \tan(\pi - \alpha)} = \frac{-\tan \alpha + r \tan \alpha}{-\tan \alpha - \tan \alpha} = \frac{r}{-2} = -1$$

سوال ۶ :

$$\tan \frac{\pi}{18} = \alpha \rightsquigarrow \alpha = 10^\circ$$

$$\frac{r \tan 10^\circ + \tan 10^\circ}{r \tan 10^\circ - \tan 10^\circ} = \frac{r(2 \tan 10^\circ) + \tan 10^\circ}{r(2 \tan 10^\circ) - \tan 10^\circ} = \frac{10 \tan 10^\circ}{14 \tan 10^\circ} = \frac{10}{14}$$

سوال ۷ :

$$\frac{\sin \alpha + \cos \alpha}{\sin \alpha - \cos \alpha} + \frac{\sin \alpha - \cos \alpha}{\sin \alpha + \cos \alpha} = r \rightsquigarrow \frac{(\sin \alpha + \cos \alpha)^2 + (\sin \alpha - \cos \alpha)^2}{\sin^2 \alpha - \cos^2 \alpha} = r$$

$$\frac{\sin^2 \alpha + \cos^2 \alpha + r \sin \alpha \cos \alpha + \sin^2 \alpha + \cos^2 \alpha - r \sin \alpha \cos \alpha}{\sin^2 \alpha - \cos^2 \alpha} = \frac{2}{\sin^2 \alpha - \cos^2 \alpha} = r$$

$$\left. \begin{array}{l} \sin^2 \alpha - \cos^2 \alpha = \frac{r}{2} \\ \sin^2 \alpha + \cos^2 \alpha = 1 \end{array} \right\} \rightsquigarrow \frac{\sin^2 \alpha + \cos^2 \alpha}{\cos^2 \alpha + \frac{r}{2}} = \frac{1}{\cos^2 \alpha} \rightsquigarrow \frac{1}{\cos^2 \alpha} = \frac{1}{\cos^2 \alpha} + \frac{r}{2 \cos^2 \alpha}$$

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

$$\cos^2 \alpha = 1 - \sin^2 \alpha$$

$$\sin^2 \alpha = 1 - \cos^2 \alpha$$

$$\tan^2 \alpha = \frac{1}{2}$$

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

$$r - r \cos^2 \alpha = \cos^2 \alpha \rightarrow \cos^2 \alpha = \frac{r}{1+r}$$

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

سوال ۹ :

$$\cos \left(\frac{\pi}{4} \right) = \frac{\sqrt{r+1}}{1+r}$$

$$\sin(45^\circ) = \cos(45^\circ) = \frac{\sqrt{r+1}}{1+r}$$

سوال ۱۰ :

$$\frac{\pi}{\kappa} = \left(\frac{\pi}{4}\right) \times \frac{1}{\kappa} = \frac{\kappa^0}{\kappa} = 12^\circ$$



$$A = \frac{\kappa \tan\left(\frac{\pi}{\kappa} - 12^\circ\right) + \tan\left(\frac{\pi}{\kappa} + 12^\circ\right)}{\kappa \tan(\pi - 12^\circ) - \tan\left(\frac{\pi}{\kappa} - 12^\circ\right)} = \frac{\kappa \cot 12^\circ - \cot 12^\circ}{-\kappa \tan 12^\circ - \cot 12^\circ}$$

$$A = \frac{\cot 12^\circ}{-\kappa \tan 12^\circ - \cot 12^\circ} \xrightarrow{\tan 12^\circ = a} \frac{\frac{1}{a}}{-\kappa a - \frac{1}{a}} = \frac{-1}{\kappa a^2 + 1}$$