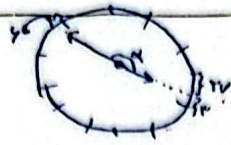


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$$\frac{40}{54} \mid \frac{30}{7} \rightarrow 27$$

(الف) $\alpha = 4 + 12 + 27 = 43^\circ$

(ب) $\alpha = |30h - 5.5m| = |90 - \frac{11}{2} \times \frac{29}{5}| = 2.0^\circ$
 $34 - 2.0 = 153^\circ$

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$\alpha = 9 + 40 + 12 = 61^\circ$



$$\frac{4}{18} \mid \frac{3}{?} \rightarrow 9$$

(ب) $\alpha = |30h - 5.5m| = |110 - \frac{11}{2} \times \frac{9}{5}| = 11^\circ$

(الف) $S = \frac{\pi}{18} \times \pi r^2 = \frac{1}{18} \times \pi r^2 = \frac{1}{18} \times \pi \times 12^2 = \frac{1}{18} \times \pi \times 144 = \frac{144\pi}{18} = 8\pi$

(ب) $\angle P = \alpha R + 2R = \frac{\pi}{9} \times 3 + 4 = \frac{3\pi}{9} + 4$

(الف) $S_{\triangle ABC} = \frac{1}{2} ab \sin \alpha = \frac{1}{2} \times a \times \frac{1}{2} \times \frac{\sqrt{3}}{2} = 1.0\sqrt{3}$

(ب) $P_{\triangle ABC} = a+b+c$ $b=1$ $c=2$ $\Rightarrow a = \sqrt{b^2 + c^2 - 2bc \cos \alpha} = \sqrt{1^2 + 2^2 - 2 \times 1 \times 2 \times \frac{1}{2}} = \sqrt{4 + 2 - 2} = \sqrt{4} = 2$

$\sqrt{4 + 2 - 2} = \sqrt{4} = 2 \Rightarrow P = 1 + 2 + 2 = 5$

$\hat{B} + \hat{C} = 180^\circ \Rightarrow A = 30^\circ$
 $\hat{A}C = 10\sqrt{2}$

$\hat{B}C = 10$
 $\frac{a}{\sin A} = \frac{b}{\sin B} \Rightarrow \frac{10}{\sin 30^\circ} = \frac{10\sqrt{2}}{\sin B} \Rightarrow \sin B = \frac{\sqrt{2}}{2} \Rightarrow B = 45^\circ$
 $\hat{A} = 30^\circ$ $\hat{B} = 45^\circ$ $\hat{C} = 105^\circ \Rightarrow \hat{B} = \frac{\pi}{4}$ $\hat{C} = \frac{1.05\pi}{1.8} = \frac{7\pi}{12}$

$\frac{18}{1.0} \mid \frac{\pi}{?} \Rightarrow \frac{1.05\pi}{1.8} = \frac{7\pi}{12} = \frac{7\pi}{12}$

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

$$\tan \frac{\pi}{4} = a \Rightarrow \frac{\pi}{4} = \arctan a \rightarrow \cot \frac{\pi}{4} = \frac{1}{\tan \frac{\pi}{4}} = \frac{1}{a}$$

$$A = \frac{r \tan(\frac{\pi}{4} - 10) + \tan(\frac{\pi}{4} + 10)}{r \tan(\frac{\pi}{4} - 10) - \tan(\frac{\pi}{4} + 10)} = \frac{r \cot(10) - \cot(10)}{-r \tan(10) - \tan(10)} = \frac{\cot(10)}{r \tan(10) + \tan(10)}$$

$$\frac{\frac{1}{a}}{-ra - \frac{1}{a}} = \frac{\frac{1}{a}}{-\frac{ra^2 - 1}{a}} = \frac{1}{-ra^2 - 1}$$

$$\frac{(\sin u + \cos u)^r + (\sin u - \cos u)^r}{\sin^r u - \cos^r u} = r \frac{r(\sin^r u + \cos^r u)}{\sin^r u - \cos^r u} = r$$

$$\frac{r}{1 - r \cos^r u} = r \quad r - 4 \cos^r u = r \Rightarrow 4 \cos^r u = 1 \Rightarrow \cos^r u = \frac{1}{4}$$

$$1 + \tan^r u = \frac{1}{\cos^r u} \Rightarrow \tan^r u = \frac{1}{\frac{1}{4}} - 1 = 4 - 1 = 3$$

$$\frac{1 - \cos^r u - r \cos^r u + 1}{1 - \cos^r u + r \cos^r u - 1} = \varepsilon \quad \frac{r - r \cos^r u}{\cos^r u} = \varepsilon \quad \varepsilon \cos^r u = r - r \cos^r u$$

$$r \cos^r u = r \Rightarrow \cos^r u = 1$$

$$1 + \tan^r u = \frac{1}{\cos^r u} \Rightarrow \tan^r u = \frac{1}{\frac{1}{4}} - 1 = 4 - 1 = 3 \Rightarrow \tan u = \sqrt[4]{3} \Rightarrow u = \arctan \sqrt[4]{3}$$

$$\cos) \quad \cos^r \alpha = \frac{1 + \cos 2\alpha}{2} \Rightarrow \cos^r \frac{\pi}{4} = \frac{1 + \cos \frac{\pi}{2}}{2}$$

$$\cos \frac{\pi}{4} = \sqrt{\frac{1 + \frac{\sqrt{2}}{2}}{2}} = \sqrt{\frac{r + \sqrt{r}}{2}} = \sqrt{\frac{r + \sqrt{r}}{2}} = \frac{\sqrt{r + \sqrt{r}}}{\sqrt{2}}$$

$$\sin) \quad \sin^r \alpha = \frac{1 - \cos 2\alpha}{2} \Rightarrow \sin^r \frac{\pi}{4} = \frac{1 - \cos \frac{\pi}{2}}{2}$$

$$\sin \frac{\pi}{4} = \sqrt{\frac{1 - \frac{\sqrt{2}}{2}}{2}} = \sqrt{\frac{r - \sqrt{r}}{2}} = \frac{\sqrt{r - \sqrt{r}}}{\sqrt{2}}$$