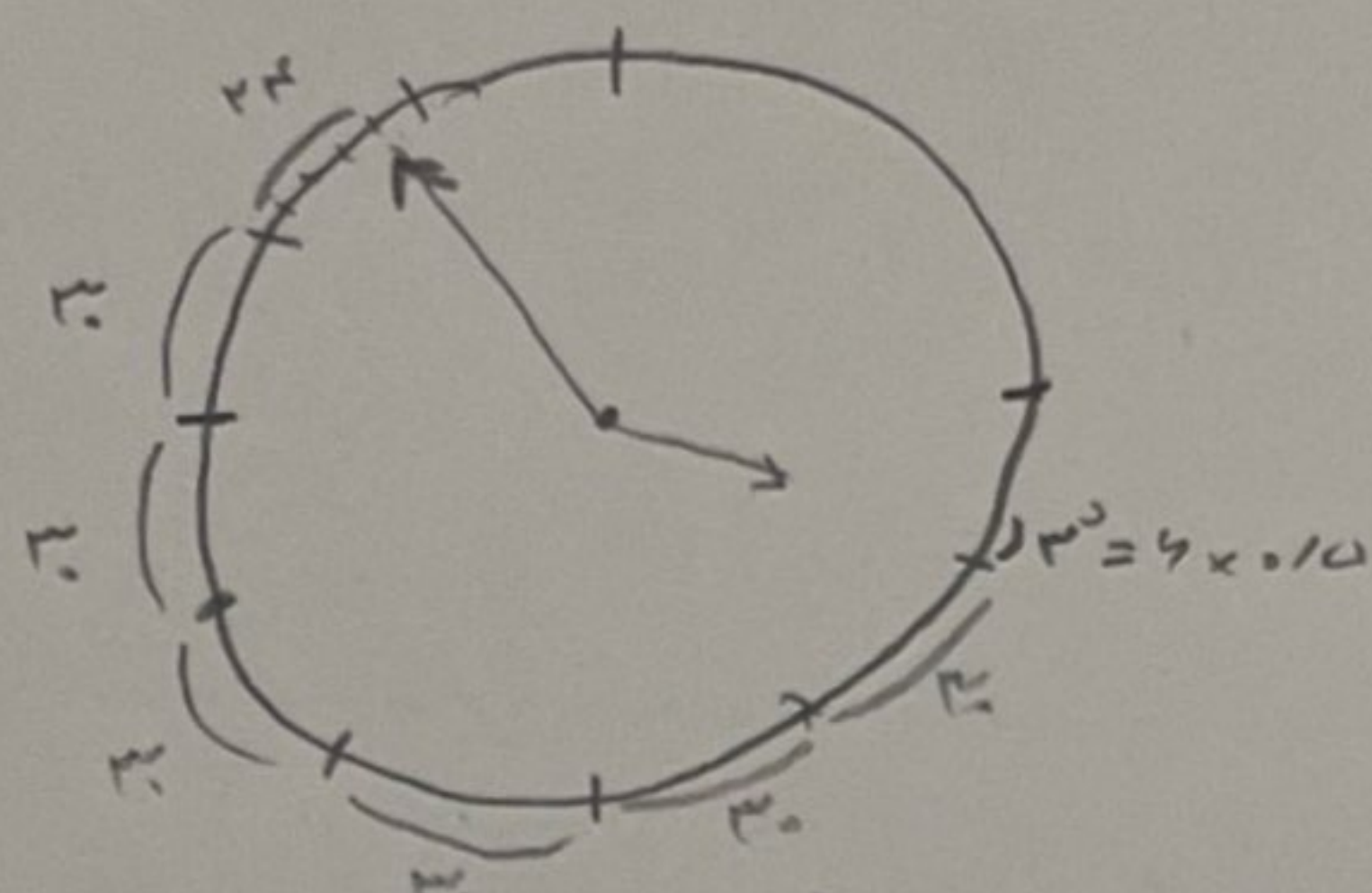


(الف)



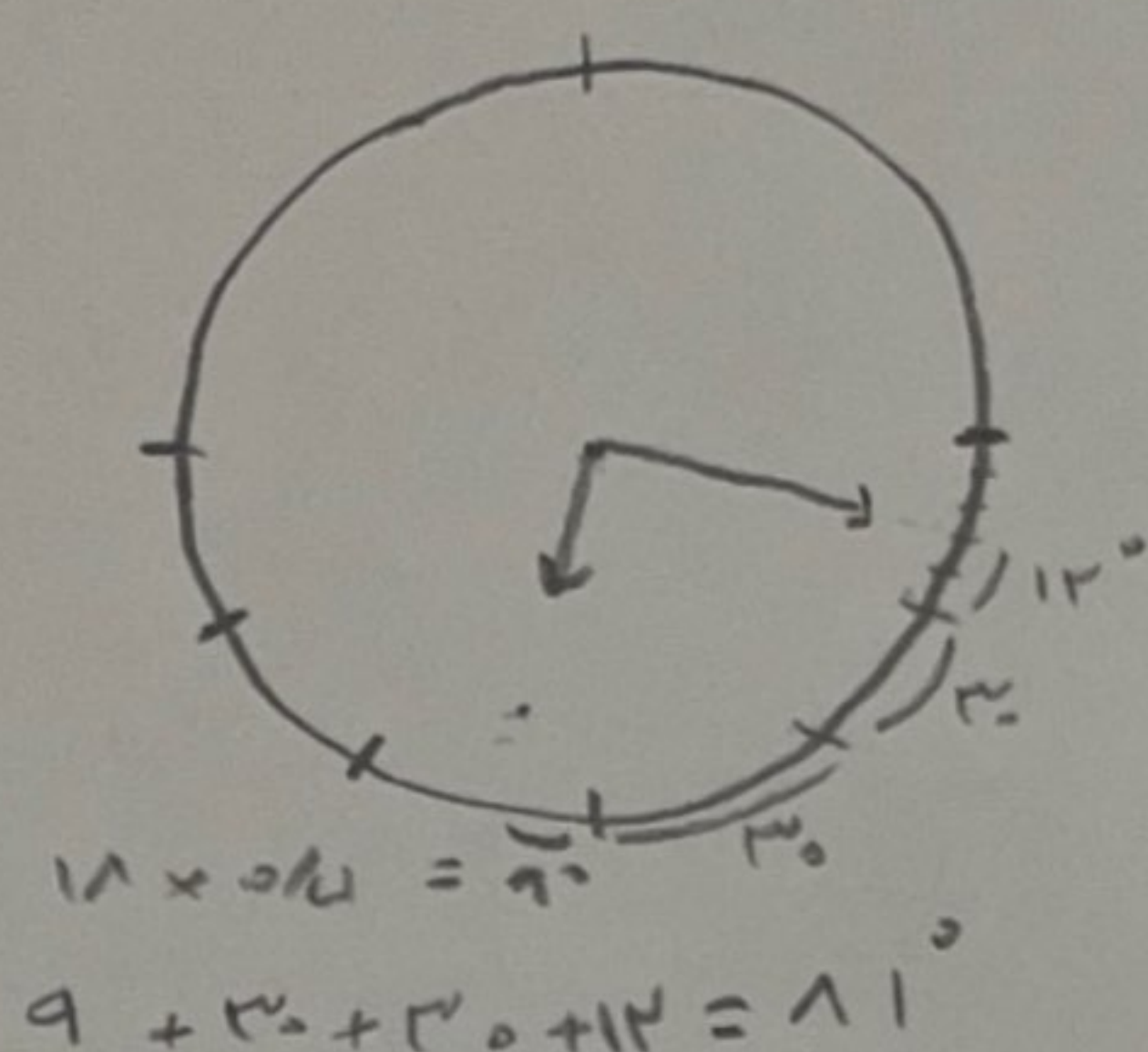
$$\gamma(30) + 2 + 3 = 20.7 \quad 34.$$

$$\theta = |30h - 4/4m|$$

$$|30(3) - 4/4(4)| = |70 - 29| = 41$$

$$34 - 41 = -7$$

(الف)



$$18 \times 0.4 = 7.2$$

$$9 + 30 + 30 + 12 = 81$$

$$\theta = |18h - 4/4m|$$

$$|18(4) - 4/4(18)| = |180 - 99| = 81$$

(الف)

$$\frac{1}{r} \times \frac{\pi}{2} \times (r) = \frac{\pi}{4}$$

$$|AB| = \pi r \rightarrow \frac{\pi}{2} \times r = \frac{\pi}{4}$$

$$r(2) + \frac{\pi}{r} = 6 + \frac{\pi}{r}$$

(الف)

$$S = \frac{1}{2} \times 4 \times 4 \times \sin 45^\circ = 10\sqrt{2}$$

$$BC^2 = 4^2 + 4^2 - 2(4)(4)\cos 45^\circ$$

$$BC^2 = 24 + 16 - 16\sqrt{2}$$

$$BC^2 = 49 \rightarrow BE = 7$$

$$P = 7 + 4 + 4 = 15$$

$$\hat{B} + \hat{C} = 150^\circ \rightarrow 180 - 150 = 30^\circ = \hat{A} = \frac{\pi}{6}$$

$$AC = 10\sqrt{2}$$

$$BC = 10$$

$$\frac{BC}{\sin A} = \frac{10}{\sin \frac{\pi}{6}} = \frac{10}{\frac{1}{2}} = 20$$

$$\frac{AC}{\sin B} = 20 \rightarrow \sin B = \frac{10\sqrt{2}}{20} = \frac{\sqrt{2}}{2}$$

$$\sin B = \frac{10\sqrt{2}}{20} = \frac{\sqrt{2}}{2} \rightarrow B = 45^\circ$$

$$\hat{C} = (\hat{B} + \hat{C}) - \hat{B} = \frac{4\pi}{3} - \frac{\pi}{6} = \frac{7\pi}{6}$$

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

6

$$\frac{r \tan 150^\circ + \tan 10^\circ}{r \tan 170^\circ - \tan 10^\circ} = \frac{r \tan(\frac{\pi}{2} - 10^\circ) + \tan(\frac{\pi}{2} + 10^\circ)}{r \tan(\pi - 10^\circ) - \tan(\frac{\pi}{2} - 10^\circ)} = \frac{r \cot 10^\circ - \cot 10^\circ}{- \tan 10^\circ - \cot 10^\circ}$$

$$\frac{r \cot 10^\circ}{- \tan 10^\circ - \cot 10^\circ} = \frac{\frac{1}{a}}{-a - \frac{1}{a}} = \frac{\frac{1}{a}}{-\frac{a^2 + 1}{a}} = -\frac{1}{a^2 + 1}$$

7

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

8

$$\frac{r}{\sin^r x - \cos^r x} = r \rightarrow \frac{\sin^r x - \cos^r x}{\cos^r x} = \frac{r}{\cos^r x} \rightarrow \sin^r x - \cos^r x = \frac{r}{\cos^r x} \rightarrow 1 - \cos^r x - \cos^r x = \frac{r}{\cos^r x} \rightarrow 1 - 2\cos^r x = \frac{r}{\cos^r x} \rightarrow \cos^r x = \frac{1}{2} \rightarrow \cos x = \frac{1}{\sqrt{2}} \rightarrow \tan x = \frac{1}{1} = 1 \rightarrow x = 45^\circ$$

$$\frac{\sin^r x - r \cos^r x + 1}{\sin^r x + r \cos^r x - 1} = r \rightarrow \frac{1 - \cos^r x - r \cos^r x + 1}{1 - \cos^r x + r \cos^r x - 1} = \frac{-r \cos^r x + 1}{r \cos^r x} = r$$

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

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

9

$$\cos 15^\circ = \sqrt{\frac{1 + \cos 30^\circ}{2}}$$

$$= \sqrt{\frac{1 + \frac{\sqrt{3}}{2}}{2}} = \frac{\sqrt{2 + \sqrt{3}}}{2}$$

$$\sin 15^\circ = \sqrt{\frac{1 - \cos 30^\circ}{2}} = \sqrt{\frac{1 - \frac{\sqrt{3}}{2}}{2}} = \frac{\sqrt{2 - \sqrt{3}}}{2}$$

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