

$$BT = \tan\left(\frac{\pi}{2} - \alpha\right) = \cot \alpha$$

① اگر فرض کنیم که شعاع دایره متقاطع یک واحد است داریم:

$$\Rightarrow OB = \sqrt{1 + \cot^2 \alpha} = \frac{1}{\sin \alpha} \Rightarrow AB = \frac{1}{\sin \alpha} - 1 = \frac{1 - \sin \alpha}{\sin \alpha}$$

② اگر فرض کنیم شعاع دایره متقاطع $\sqrt{2}$ واحد است داریم:

$$\frac{AC}{\sin \alpha} = \frac{r}{\frac{1}{2}} = 4 \Rightarrow AC = 4 \sin \alpha$$

$$\frac{AB}{\sin \alpha} = \frac{r}{\frac{\sqrt{2}}{2}} = 4\sqrt{2} \Rightarrow AB = 4\sqrt{2} \sin \alpha$$

$$\frac{AB}{AC} = \frac{4\sqrt{2} \sin \alpha}{4 \sin \alpha} = \sqrt{2}$$

③ این بار به مختصات نقاط A, B, C و α صاف را می بینیم:

$$A\left(\frac{1}{\sqrt{2}}, \frac{\sqrt{2}}{\sqrt{2}}\right), B\left(-\frac{\sqrt{2}}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right), C(1, 0)$$

$$\Rightarrow \frac{1}{2} \left| \frac{1}{\sqrt{2}} \left(\frac{\sqrt{2}}{\sqrt{2}} + \frac{1}{\sqrt{2}} \right) + \frac{\sqrt{2}}{\sqrt{2}} (-1 - \frac{\sqrt{2}}{\sqrt{2}}) \right| = \frac{+\sqrt{2} + 2}{2} = S_{ABC}$$

~~$$AB = \sqrt{\frac{1}{2} + \frac{2}{2}} = \sqrt{\frac{3}{2}} = \frac{\sqrt{6}}{2}$$~~

~~$$AB = \sqrt{\frac{1}{2} + \frac{2}{2}} = \sqrt{\frac{3}{2}} = \frac{\sqrt{6}}{2}$$~~

$$BC = \sqrt{\frac{3}{2} + \frac{9}{2}} = \sqrt{\frac{12}{2}} = \sqrt{6}$$

$$AC = \sqrt{\frac{1}{2} + \frac{3}{2} + \sqrt{2} + 1} = \sqrt{2 + \sqrt{2}} \Rightarrow P = \sqrt{2} + \sqrt{3} + \sqrt{2 + \sqrt{2}}$$

④

جواب سوال ۱۱: (۲)

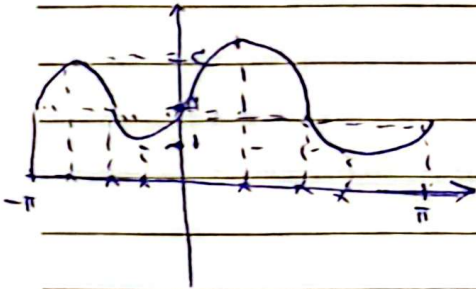
$$x = \cos \alpha \rightarrow r \cos \alpha - \cos \alpha + \sin \alpha (\sin \alpha - \cos \alpha) = 1$$

$$\rightarrow \cos \alpha (r \cos \alpha - 1) + \sin \alpha (\cos \alpha) \rightarrow \cos \alpha \cos \alpha + \sin \alpha \cos \alpha = \cos \alpha = 1$$

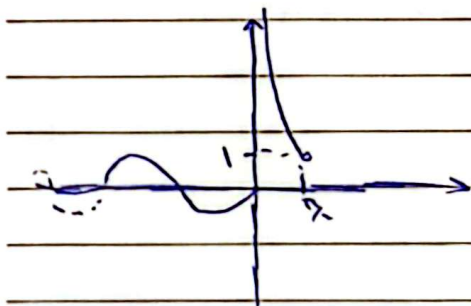
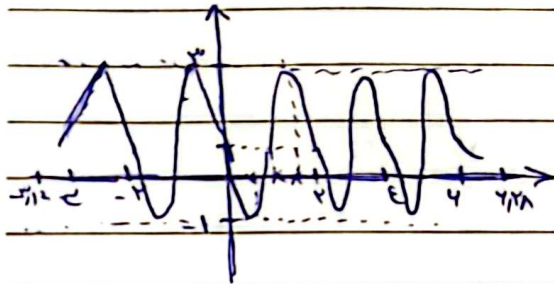
$$\rightarrow \sin \alpha = 0$$

$$c1) y = -r \sin x \cos x + r \rightarrow y = -\sin x + r \quad (T = \pi)$$

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$$c2) y = r \cos(x\pi + \pi/r) + 1 \rightarrow -r \sin(x\pi) + 1 \quad (T = r)$$



$$R_f = [1, +\infty)$$

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$$f(x) = a + \frac{b}{r} \sin(x\pi) \rightarrow T = \frac{r\pi}{\omega} = \frac{r\pi}{\pi} \rightarrow \boxed{C = \frac{\omega}{\pi}}$$

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$$y_{\min} + y_{\max} = f = \frac{b}{r} \Rightarrow \boxed{b = r} \rightarrow y_{\max} - y_{\min} = f - r a \rightarrow a = r$$

$$\frac{1 \times \frac{\omega}{\pi}}{r} = \omega$$

Parsian

