

$$\begin{aligned} OB^r &= OT^r + BT^r \\ OB^r &= 1 + \cot^r \alpha = \frac{1}{\sin \alpha} \\ OB^r &= \frac{1}{\sin \alpha} \xrightarrow[\text{در } \triangle OBT]{\sin \alpha} OB = \frac{1}{\sin \alpha} \end{aligned}$$

$$AB = \frac{1}{\sin \alpha} - 1$$

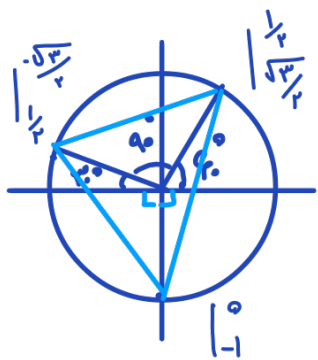
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$$\begin{aligned} AC &= 4 \sin \alpha \\ AB &= 4\sqrt{2} \sin \alpha \\ \frac{AB}{AC} &= \frac{4\sqrt{2} \sin \alpha}{4 \sin \alpha} = \sqrt{2} \end{aligned}$$

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$$\begin{aligned} \sin(\pi - \theta) &= \sin \theta \\ \frac{1}{4} \times 1 \times \sin 120^\circ &= \frac{\sqrt{3}}{4} \\ \frac{1}{4} \times 1 \times \sin 90^\circ &= \frac{1}{4} \\ \frac{1}{4} \times 1 \times \sin 150^\circ &= \frac{1}{4} \\ \sin(90^\circ + \theta) &= \cos \theta = \frac{1}{4} \\ \frac{1}{4} + \frac{1}{4} + \frac{\sqrt{3}}{4} &= \frac{1+\sqrt{3}}{2} \checkmark \end{aligned}$$

$$\text{فاصله نقطه: } \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\begin{aligned} AB &= \sqrt{2} \\ BC &= \sqrt{2} + \sqrt{3} \\ AC &= \sqrt{3} \checkmark \end{aligned}$$

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$$Ac = \frac{\log \frac{1}{4}}{\log \frac{1}{2}}, \quad Bc = \frac{\log \frac{1}{2}}{\log \frac{1}{4}} = \frac{3 \log \frac{1}{2}}{\log \frac{1}{4}}$$

$$S_{\Delta} = \frac{1}{2} ab \sin \theta \Rightarrow \frac{1}{2} \cdot AC \cdot BC \cdot \sin C = c \sin C$$

$$\text{if } C = 30^\circ \Rightarrow S_{\Delta} = 3$$

من با ایجاد به راحتی حل کردم
ولی با زاویه $C = 30^\circ$ و در مثل اشتباه نشد
من خیلی روی این سوال فکر کردم نه با قانون $\sin$
به نتیجه ای رسیدم و نه با قانون $\cos$ با کجاء دارم اشتباه
می کنم یا بی دقتی کردم نه به جواب نرسیدم

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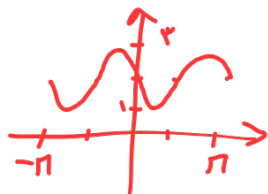
$$\begin{aligned} r \cos^2 \alpha - \cos^2 \alpha - r \sin^2 \alpha + \sin^2 \alpha &= 1 \leftarrow f(\cos \alpha) = 1 \\ r (\cos^2 \alpha - \sin^2 \alpha) (\cos^2 \alpha + \sin^2 \alpha) + \sin^2 \alpha - \cos^2 \alpha &= 1 \\ r \cos^2 \alpha - (\cos^2 \alpha - \sin^2 \alpha) &= r \cos^2 \alpha - \cos^2 \alpha = 1 \\ \cos^2 \alpha = 1 &\rightarrow \sin^2 \alpha + \cos^2 \alpha = 1 \rightarrow \sin^2 \alpha = 0 \end{aligned}$$

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الف) $T = \pi$

$$R_f = [1, 3]$$

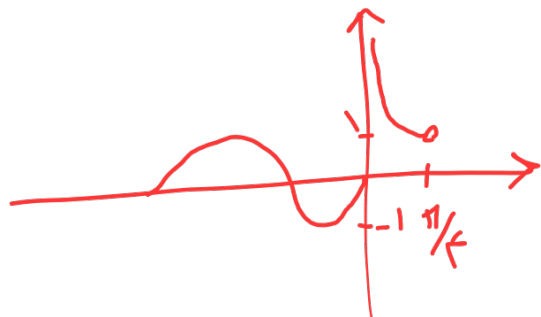


ب) $T = 2$

$$R_f = [-1, 3]$$



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

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$$\frac{\sin \alpha \cos \alpha \cos \alpha}{\frac{1}{f} \sin \alpha} = \frac{1}{f} \sin \alpha$$

$$T = \frac{\pi}{|f|} = \frac{\pi}{\omega}$$

$$C = \frac{\omega}{f}$$

$$\begin{aligned} a &= 2 \\ b &= 1 \end{aligned}$$

$$\frac{bc}{a} = \omega$$

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$$b = \pm 2 \rightarrow b = 2$$

$$f(x) = -2 \cos x - 1$$

$$\begin{cases} f(0) = -1 \\ f(\frac{\pi}{2}) = -1 \end{cases} \rightarrow \begin{aligned} C &= -1 \\ a &= -2 \end{aligned}$$

$$\cos 2\alpha = -\frac{1}{2}$$

$$|\tan 2\alpha| = \sqrt{3}$$



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$$f(-\sqrt{e}, 0) = f(-\sqrt{e} + 1, 0) = f(1, 0)$$

$$f(x) = \begin{cases} -\frac{1}{f}x + 1 & 0 \leq x \leq 1 \\ x + 1 & -1 \leq x < 0 \end{cases} \rightarrow f(1, 0) = \frac{1}{f}$$

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