

$$\frac{AB}{AC} = \frac{BD}{DC} \cdot \frac{\sin \hat{B}AD}{\sin \hat{D}AC} \Rightarrow \frac{AB}{AC} = 2 \times \frac{\sin 60^\circ}{\sin 30^\circ}$$

$$= 2 \times \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \boxed{2\sqrt{3}}$$

مثلاً:

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

$$A \mid \frac{1}{\sqrt{2}} \rightarrow y = \frac{\sqrt{3}}{\sqrt{2}}$$

$$B \mid x \rightarrow \frac{-\sqrt{3}}{\sqrt{2}}$$

$$C \mid \begin{matrix} 0 \\ -1 \end{matrix}$$

$$AB = \sqrt{\left(\frac{1}{\sqrt{2}} + \frac{\sqrt{3}}{\sqrt{2}}\right)^2 + \left(\frac{\sqrt{3}}{\sqrt{2}} - \frac{1}{\sqrt{2}}\right)^2} = \sqrt{2}$$

$$AC = \sqrt{\left(\frac{1}{\sqrt{2}}\right)^2 + \left(\frac{\sqrt{3}}{\sqrt{2}} + 1\right)^2} = \sqrt{2 + \sqrt{3}}$$

$$BC = \sqrt{\left(\frac{\sqrt{3}}{\sqrt{2}}\right)^2 + \left(\frac{1}{\sqrt{2}}\right)^2} = \sqrt{2}$$

$$\text{محیط} = \sqrt{2} + \sqrt{2} + \sqrt{2 + \sqrt{3}}$$

~~$x = \cos \alpha \rightarrow x \cos^2 \alpha - \cos^2 \alpha - \sin^2 \alpha (x \sin^2 \alpha - 1)$~~
 ~~$x \cos^2 \alpha - \cos^2 \alpha - x \sin^2 \alpha + \sin^2 \alpha = 1 \Rightarrow x \cos^2 \alpha - x \sin^2 \alpha + \sin^2 \alpha - \cos^2 \alpha = 1$~~

$$\frac{BC}{\sin A} = \frac{AC}{\sin B} \Rightarrow \frac{\log \frac{2\sqrt{2}}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = \frac{\log \frac{1}{\sqrt{2}}}{\sin \hat{B}}$$

$$x = \cos \alpha \rightarrow x \cos^2 \alpha - \cos^2 \alpha - \sin^2 \alpha (x \sin^2 \alpha - 1)$$

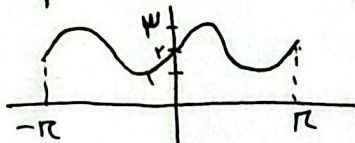
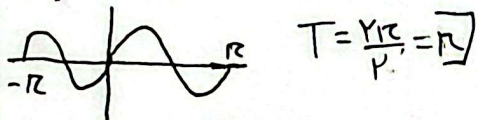
$$x \cos^2 \alpha - \cos^2 \alpha - x \sin^2 \alpha + \sin^2 \alpha = 1 \Rightarrow x \cos^2 \alpha - x \sin^2 \alpha + \sin^2 \alpha - \cos^2 \alpha = 1$$

$$x((\cos^2 \alpha + \sin^2 \alpha)(\cos^2 \alpha - \sin^2 \alpha)) + \sin^2 \alpha - \cos^2 \alpha = 1$$

$$x \cos^2 \alpha - x \sin^2 \alpha + \sin^2 \alpha - \cos^2 \alpha = 1 \Rightarrow \cos^2 \alpha - \sin^2 \alpha = \cos 2\alpha = 1$$

$$\Rightarrow \boxed{\sin^2 \alpha = 0}$$

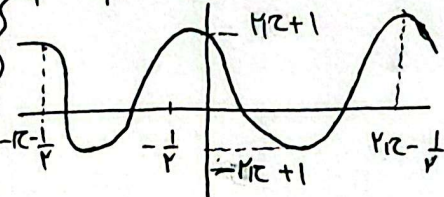
$$الف) \quad y = 2 \sin x \cos x + 2 = -\sin 2x + 2$$



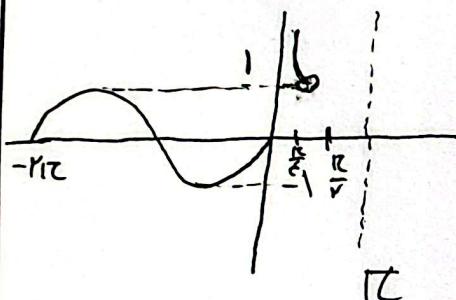
$$ب) \quad y = 2 \cos(x + \frac{\pi}{4}) + 1$$

$$\rightarrow 2 \cos(x + \frac{\pi}{4}) + 1$$

$$T = \frac{2\pi}{1} = 2\pi$$



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$$\cos(x + \frac{\pi}{4}) = 1$$

$$\Rightarrow R_f = [-19 + \infty)$$

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فرض می کنیم معادله شکل به صورت $y = a \sin bx + c$

$$T = \frac{2\pi}{|b|} = \frac{2\pi}{\omega} \Rightarrow |b| = \omega \Rightarrow b = \pm \omega$$

$$y_{\max} = |a| + c = 4 \quad \left\{ \begin{array}{l} \Rightarrow 2|a| = 4 \Rightarrow |a| = 2 \Rightarrow c = -2 \text{ و } a = \pm 2 \\ y_{\min} = -|a| + c = 0 \end{array} \right.$$

با توجه به شکل مشخص است که a و b مختلف علامه اند زیرا قریبه شکل Sine است $\Rightarrow$ مثلاً: $y = 2 \sin -\omega x + 2 \Rightarrow \frac{bc}{a} = \frac{-\omega \times 2}{2} = -\omega$

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$$y_{\max} = |a| + c = 2 \quad \left\{ \begin{array}{l} \Rightarrow 2|a| = 4 \Rightarrow |a| = 2 \Rightarrow c = -1 \\ y_{\min} = -|a| + c = -4 \end{array} \right. \quad T = 2\pi \text{ شکل}$$

$$\frac{2\pi}{|b|} = 2\pi \Rightarrow |b| = 2$$

$$\cos(0) = 1 \Rightarrow a \cos(0) + c = -4$$

$$\Rightarrow a + c = -4 \Rightarrow a = -3$$

و چون شکل قریبه Cosine است پس a و b مختلف علامه بودند $b = +2$

$$\rightarrow y = -3 \cos 2x - 1 \quad y = -3 \cos 2x - 1 = 0 \Rightarrow \cos 2x = -\frac{1}{3} \Rightarrow \sin 2x = \frac{\sqrt{1 - \frac{1}{9}}}{3} \Rightarrow \tan 2x = \frac{\sqrt{8}}{3} = \frac{2\sqrt{2}}{3}$$

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$$[-37 \text{ و } -34)$$

$$[-19 \text{ و } -1) \leftarrow [-4 \text{ و } -1) \leftarrow [-7 \text{ و } -4)$$

چون شکل متناوب است $-34/5$ و $-37/5$ واحد از مرکز راست محدوده کمتر است

پس در شکل اصلی باید $f(11\omega) = f(2 - 0.5\omega)$ را بدست آوریم

و چون معادله خط بین $[0, 2]$: $-\frac{x}{4} + 1$ است

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$$f(\frac{3}{4}) = -\frac{3}{4} + 1 = \frac{1}{4}$$