

$$y = -x^2 + bx + 3 \quad y = -\frac{\Delta}{4a} = \frac{4ac - b^2}{-4} = \frac{-12 - b^2}{-4} = V \rightarrow -21 = -12 - b^2$$

$$\rightarrow b^2 = 9 \rightarrow b = \pm 3$$

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الف) $f(x) = x^2 + 2x + 3 = (x^2 + 1) + 2 \geq 0 + 2 = 2 > 0 \rightarrow$ همیشه برقرار برای هر $x \in \mathbb{R}$ می‌باشد $\rightarrow$ همیشه برقرار

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ب) $f(x) = (4 - x^2)^2 - 2(4 - x^2) - 15 \xrightarrow{4 - x^2 = t} t^2 - 2t - 15 = 0 \begin{cases} t = 5 \\ t = -3 \end{cases}$

$t = 5 \rightarrow 4 - x^2 = 5 \rightarrow x^2 = -1$ غلط

$t = -3 \rightarrow 4 - x^2 = -3 \rightarrow x^2 = 7 \rightarrow x = \pm \sqrt{7}$

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ریشه ها: $\alpha, \alpha + 2 \xrightarrow{\beta} S = 2\alpha + 2 = -\frac{b}{a} = 4 \rightarrow 2\alpha = 2 \rightarrow \alpha = 1$

$P = \alpha^2 + 2\alpha \xrightarrow{\alpha=1} P = 1 + 2 = 3 \rightarrow \alpha + 2 = 3 \rightarrow \beta = 3$

$P = \frac{c}{a} = 3 = \frac{m}{f} \rightarrow m = 12$

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$2x^2 - 9x + m - 1 = 0 \begin{cases} S = \frac{9}{2} = 2 \\ P = \frac{m-1}{2} \end{cases} \quad 2\alpha - \beta = 2 \rightarrow \beta = 4 - 2\alpha$

$S = \alpha + \beta = \alpha + 4 - 2\alpha = 2 \rightarrow -\alpha = -2 \rightarrow \alpha = 2 \rightarrow \beta = 4 - 2\alpha = 0$

$\rightarrow P = 0 = \frac{m-1}{2} \rightarrow m-1=0 \rightarrow m=1$

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$-mx^2 + 4x + m^2 - 1 = 0 \rightarrow \frac{c}{a} = 1 \rightarrow m^2 - 1 = -m \rightarrow m^2 + m - 1 = 0 \begin{cases} m = -2 \\ m = 1 \end{cases}$

$m = -2 \rightarrow 2x^2 + 4x + 1 = 0 \rightarrow \Delta = 0 \rightarrow$ تقاطع ندارد $\rightarrow$ غلط $\times$

$m = 1 \rightarrow -x^2 + 4x - 1 = 0 \rightarrow \Delta > 0 \rightarrow$ تقاطع دارد $\checkmark$

$$\alpha B = F \rightarrow \alpha B = F \rightarrow B = \frac{F}{\alpha} \rightarrow \alpha \frac{F}{\alpha} = F \rightarrow \alpha = \frac{F}{F} = 1$$

$$x^2 - m x + r = 0$$

$$S = \frac{F}{r} + \frac{1}{r} = \frac{14 + 2V}{12} = \frac{F}{12} \rightarrow x^2 - \frac{F}{12} x + r = 0 \rightarrow m = \frac{F}{12}$$

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$$x^2 - m x + r = 0 \rightarrow \alpha, r \alpha : \text{لا } \approx \left\{ \begin{array}{l} S = F \alpha = F \rightarrow \alpha = 1 \rightarrow \beta = r \alpha = r \\ \rho = m = 1 \times r \rightarrow m = r \end{array} \right.$$

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$$x^2 - V x + r = 0 \rightarrow \alpha^2 + r = 0 \rightarrow \alpha^2 = -r \rightarrow \alpha = \sqrt{-r} \rightarrow \alpha + \frac{r}{\alpha} = V$$

$$\left(\alpha + \frac{r}{\alpha} \right)^2 = \alpha^2 + \frac{1}{\alpha^2} + r \alpha \cdot \frac{r}{\alpha} \rightarrow V^2 = \alpha^2 + \frac{1}{\alpha^2} + r \times r \times V \rightarrow$$

$$r \times r = \alpha^2 + \frac{1}{\alpha^2} + r \rightarrow \alpha^2 + \frac{1}{\alpha^2} = r \times r - r = r(r-1)$$

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$$h(t) = -1.6t^2 + \omega_0 t \rightarrow 0 = -1.6t^2 + \omega_0 t \rightarrow 1.6t^2 = \omega_0 t \rightarrow \left\{ \begin{array}{l} t = 0 \\ t = \frac{\omega_0}{1.6} \end{array} \right. \rightarrow \text{لحظة الجذب$$

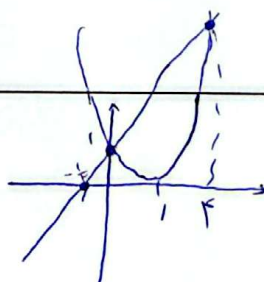
$$x_{\max} = \frac{-\omega_0}{-1.6} = \frac{\omega_0}{1.6} \rightarrow y_{\max} = -1.6 \times \frac{\omega_0^2}{1.6^2} + 1.6 \omega_0 = -\frac{\omega_0^2}{1.6} + 1.6 \omega_0 = \frac{\omega_0^2}{1.6}$$

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$$(x-1)^2 = 2x+1$$

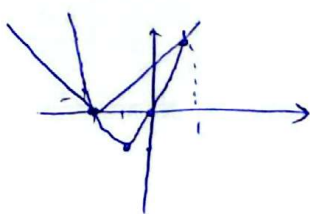
$$y = 2x+1 \rightarrow (0, 1) \quad (-1, 0)$$

$$x^2 + r x = |x+r|$$



$$x=0$$

$$x=1$$



$$x=-1$$

$$x=1$$

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$$x^2 + r x = 0 \rightarrow x(x+r) = 0 \rightarrow \left\{ \begin{array}{l} x=0 \\ x=-r \end{array} \right. \rightarrow y = -1$$