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$$y = -x^2 + bx + 3$$

$$\frac{-b}{2a} = v \quad \frac{b^2 - 12}{4} = v$$

$$b^2 = 14 \quad b = \pm \sqrt{14}$$

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الف) $f(x) = x^2 + 2x + 3 \quad x^2 = t$

$$t^2 + 2t + 3 = 0 \quad \Delta < 0 \quad \text{تابع منفرد}$$

ب) $x^2(x-2)^2 - 1(x-2)^2 - 1 = 0$

$$x^2 - 2 = t \quad t^2 - 2t - 1 = 0$$

$$(t-5)(t+3) = 0 \quad \begin{cases} t = 5 \Rightarrow x^2 = 5 \Rightarrow x = \pm \sqrt{5} \\ t = -3 \Rightarrow x^2 = -3 \Rightarrow \text{ریشه ندارد} \end{cases}$$

ع ۱ و ۲ $\Delta = 0$

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$$x^2 - 14x + m = 0 \quad \alpha, \alpha + 2$$

$$S = \frac{-b}{a} = \frac{14}{1} = 14 = \alpha + \alpha + 2 \quad \alpha = 1 \quad \alpha + 2 = 3$$

$$P = \frac{c}{a} = \frac{m}{1} = 3 \quad m = 12$$

$f(x) = x^2 - 14x + 12 = 0 \quad \Delta > 0 \quad \checkmark$

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$$3x^2 - 4x + m - 1 = 0$$

$$2\alpha - \beta = 2 \quad \alpha = \frac{\beta + 2}{2}$$

$$S = \frac{-b}{a} = \frac{4}{3} = 2 = \beta + \frac{\beta + 2}{2}$$

$$P = \frac{m-1}{3} = 0 \quad m = 1$$

$f(x) = 3x^2 - 4x = 0 \quad \Delta > 0 \quad \checkmark$

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$$-mx^2 + 4x + m^2 - 4 = 0$$

مکمل $\Rightarrow P = \frac{c}{a} = 1 = \frac{m^2 - 4}{-m} = 1$

$$m^2 - 4 = -m$$

$$m^2 + m - 4 = 0 \quad (m+2)(m-1) = 0 \quad m = -2, 1$$

$\Delta = 0 \quad \Delta > 0 \quad \checkmark$

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$$2^r - m\pi + p = 0 \quad \frac{c}{a} = \alpha\beta = p$$

$$\alpha\beta \times \beta = p$$

$$p\beta = p$$

$$\beta = \frac{p}{p}$$

$$\alpha = \frac{p}{\frac{p}{p}} = \frac{p}{p}$$

$$S = \frac{-b}{a} = m = \frac{-1}{2} + \frac{p}{p} = \frac{p-1}{2} = \frac{p-1}{2}$$

$$2^r - \frac{p-1}{2} + p = 0 \quad \Delta > 0 \quad \checkmark$$

1, 1, 0

$$x^r - rx + m = 0 \quad \alpha, \beta$$

$$S = \frac{-b}{a} = \alpha + \beta = p \quad \alpha = 1 \quad \beta = p - 1 = p$$

$$P = \frac{c}{a} = m = p$$

$$x^r - rx + p = 0 \quad \Delta > 0 \quad \checkmark$$

1, 1, 0

$$x^r - vx + p = 0 \quad \beta = \frac{p}{\alpha}$$

$$\alpha^p + \frac{1}{\alpha^p} = \left(\alpha + \frac{1}{\alpha}\right) \left(\alpha^p + \frac{1}{\alpha^p} - p\right) = (\alpha + \beta)(\alpha^p + \beta^p - p)$$

$$(S)(S^p - p - p) = v \left(\frac{p-1}{p} - p \right) = p \cdot 1$$

1, 1, 0

$$h(t) = -\log_2 \omega t$$

$$M_{HX} \left| \frac{-b}{a} = \frac{-\omega}{-p} = \frac{\omega}{p} \right.$$

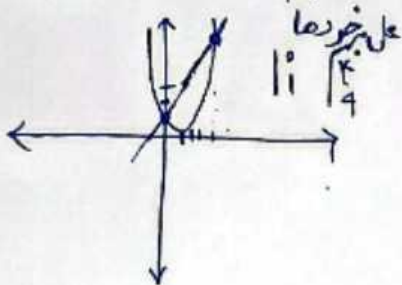
$$\left| -1 \left(\frac{p\omega}{p} \right) + \frac{p\omega}{p} = \frac{-p\omega + p\omega}{p} = \frac{0}{p} = 0 \right.$$

$$-1 \cdot t^r + \omega \cdot t = 0$$

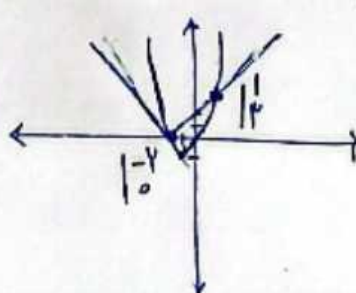
$$t(\omega - 1 \cdot t) = 0 \quad \begin{cases} t = 0 \quad \times \\ \omega = 1 \cdot t \quad t = \omega \quad \checkmark \end{cases}$$

1, 1, 0

$$(a) (x-1)^r = rx + 1$$



$$(b) x^r + rx = |x + r|$$



$$\left| \frac{-b}{a} = \frac{r}{p} = -1 \right. \\ \left| 1 - p = -1 \right.$$

1, 1, 0