

$$y = -x^2 + bx + 2 \quad \frac{-(b^2 + 12)}{-4} = v \Rightarrow \frac{b^2 + 12}{4} = v \quad b^2 = 16 \quad b = \pm 4$$

$$\frac{-\Delta}{4a} = v$$

الف) $f(x) = x^2 + 2x + 2 \quad x^2 = t \quad t^2 + 2t + 2 = 0$ حاصل جواب ندارد

ب) $f(x) = (4 - x^2)^2 - 2(4 - x^2) - 10 \Rightarrow t^2 - 2t - 10 = 0 \quad t = 5, -3$
 $4 - x^2 = 5 \Rightarrow x^2 = -1$ غلط $4 - x^2 = -3 \Rightarrow x^2 = 7 \quad x = \pm\sqrt{7}$

$$\alpha = \beta + 2 \quad S = \beta + 2 + \beta = 2\beta + 2 = 4 \Rightarrow \beta = 1 \Rightarrow \alpha = 3$$

$$\alpha \cdot \beta = \frac{m}{4} \Rightarrow 3 = \frac{m}{4} \quad m = 12$$

$$2\alpha - 4 = \beta \quad S = 2\alpha - 4 + \alpha = 3\alpha - 4 = 2 \Rightarrow \alpha = 2 \quad \rho = \frac{m-1}{4} = \alpha \cdot \beta$$

$$\beta = 1 \quad m \Rightarrow \frac{m-1}{4} = 2 \Rightarrow m = 9$$

$$\alpha = \frac{1}{\beta} \quad \rho = \frac{1}{\beta} \cdot \beta = 1 = \frac{m^2 - 2}{-m} \Rightarrow m^2 - 2 = -m \Rightarrow m^2 + m - 2 = 0 \Rightarrow m = -2, 1$$

$$m = -2 \Rightarrow -2x^2 + 4x + 2 = 0 \quad \Delta < 0 \quad m = 1 \Rightarrow \Delta > 0 \quad \checkmark$$

$$\alpha = \frac{4}{\beta^2} \quad S = \frac{4}{\beta^2} + \beta \quad \rho = \frac{4}{\beta} \quad \frac{4}{\beta} = 2 \Rightarrow \beta = \frac{4}{2} \quad \alpha = \frac{4}{4}$$

$$S = m = \alpha + \beta = \frac{4}{4} + \frac{4}{2} = \frac{2 + 4}{1} = \frac{6}{1}$$

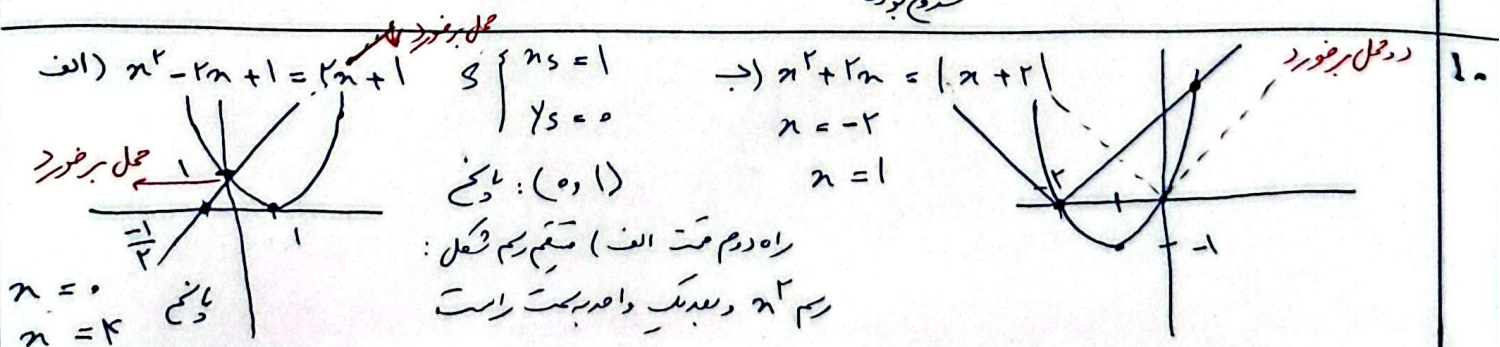
$$\alpha = 2\beta \quad S = 2\beta + \beta = 3\beta = 4 \Rightarrow \beta = \frac{4}{3} \quad \alpha = \frac{8}{3} \quad \rho = m = \alpha \cdot \beta = \frac{32}{9}$$

$$\rho = \alpha \cdot \beta = 2 \quad S = \alpha + \beta = 4 \Rightarrow \beta = \frac{2}{\alpha}$$

$$\alpha^4 + \frac{1}{\alpha^4} = \alpha^4 + \left(\frac{2}{\alpha}\right)^4 = \alpha^4 + \frac{16}{\alpha^4} = (\alpha + \beta)^4 - 4(\alpha + \beta)(\alpha \cdot \beta) = 4^4 - 4(4)(2) = 256 - 32 = 224$$

$$h(t) = -10t^2 + 50t \quad \text{Max } h = \frac{-\Delta}{4a} = \frac{-(2500)}{-40} = \frac{2500}{40} = 62.5$$

$$h = 0 \Rightarrow 50t - 10t^2 = 0 \Rightarrow t^2 - 5t = 0 \Rightarrow t = 0 \quad t = 5$$



الف)

$$2^r - r n + 1 = r n + 1$$

$$2^r - r n \leq 0 \quad n(n - r) \leq 0$$

$$n \leq 0 \quad , \quad n \leq r$$

$$\Rightarrow 2^r + r n \leq |n + r|$$

: ملاحظة

$$1 - / 2^r + r n \leq n + r \Rightarrow 2^r + n - r \leq 0$$

$$r - / 2^r + r n \leq -n - r \Rightarrow 2^r + r n + r \leq 0$$

$$n \leq -r \quad n \leq -1 \quad n = -1$$