

$y = -x^2 + bx + 3 \rightarrow y_s = \frac{-b^2 - 12}{-4} = 7 \Rightarrow b^2 + 12 = 28$ $\rightarrow b^2 = 16 \Rightarrow b = \pm 4$	1
الف) $f(x) = x^2 + 2x + 3 \rightarrow \Delta = 4 - 12 = -8 < 0$ تغییرشماره ندارد ب) $f(x) = (4 - x^2)^2 - 4(4 - x^2) - 12 = x^4 - 8x^2 + 16 - 16 + 4x^2 - 12 = x^4 - 4x^2 - 12 = 0$ $\Rightarrow (x^2 - 6)(x^2 + 2) = 0 \rightarrow x^2 = 6 \rightarrow x = \pm\sqrt{6}$ $\rightarrow x^2 = -2 \rightarrow x = \pm i\sqrt{2}$	2
$5x^2 - 14m + m = 0 \rightarrow 5x^2 + x + 2 = \frac{-b}{a} \rightarrow 2x + 2 = \frac{14}{5} \Rightarrow x = \frac{4}{5}$ $p = \frac{c}{a} = \frac{m}{5} = 2 \Rightarrow m = 10$	3
$4x^2 - 9x + m - 1 = 0$ $2\alpha - \beta = 2 \Rightarrow \beta = 2\alpha - 2 \Rightarrow \alpha + \beta = \frac{-b}{a} \Rightarrow \alpha + 2\alpha - 2 = \frac{9}{4} \Rightarrow 3\alpha = \frac{17}{4} \Rightarrow \alpha = \frac{17}{12}$ $p = \frac{c}{a} = \frac{m-1}{4} = 0 \Rightarrow m = 1$	4
$-mx^2 + 4x + m^2 - 2 = 0 \rightarrow \beta = \frac{1}{a} \rightarrow p = 1 = \frac{c}{a}$ $m = 1 \Rightarrow -x^2 + 4x - 1 = 0 \Rightarrow \Delta = 16 - 4 = 12 > 0 \Rightarrow m = 1 \text{ و } -1$ $m = -1 \Rightarrow x^2 + 4x + 1 = 0 \Rightarrow \Delta = 16 - 4 = 12 > 0 \Rightarrow m = 1 \text{ و } -1$	5

$$n^r - m n + r = 0 \quad \alpha \beta^r \leq \varepsilon \Rightarrow \underbrace{\alpha \beta \times \beta}_{= \mu} = \varepsilon \Rightarrow \beta = \frac{\varepsilon}{\mu}, \alpha = \frac{q}{\varepsilon}$$

$$p = \alpha \beta = \frac{c}{a} = \mu$$

$$S = \alpha + \beta = \frac{2}{\mu} + \frac{q}{\varepsilon} = \frac{14 + 16}{1r} \rightarrow \left(\frac{\varepsilon \mu}{1r} \right)$$

m

6

$$n^r - \varepsilon n + m = 0 \rightarrow \beta = \mu \alpha$$

$$S = \alpha + \beta = \alpha + \mu \alpha = \varepsilon \alpha = \frac{-b}{a} = \varepsilon \rightarrow \alpha = 1, \beta = \mu$$

$$p = \alpha \beta = \frac{c}{a} \Rightarrow \mu = \frac{m}{1} \Rightarrow \underline{\underline{\mu = m}}$$

7

$$n^r - v n + r = 0 \Rightarrow \alpha^r - v \alpha + r = 0 \Rightarrow \alpha^r + r = v \alpha$$

$$(a+b)^r = a^r + b^r + r a b (a+b) \Rightarrow \left(\alpha + \frac{r}{\alpha} \right)^r = \alpha^r + \frac{r}{\alpha^r} + 4 \left(\alpha + \frac{r}{\alpha} \right)$$

$$\Rightarrow \alpha^r + \frac{r}{\alpha^r} - \left(\alpha + \frac{r}{\alpha} \right)^r - 4 \left(\alpha + \frac{r}{\alpha} \right) = v^r - \varepsilon r = \mu \varepsilon \mu - \varepsilon r = \mu_0$$

$$\alpha + \frac{r}{\alpha} = \frac{\alpha^r + r}{a} = \frac{v \alpha}{\alpha} = \textcircled{v}$$

8

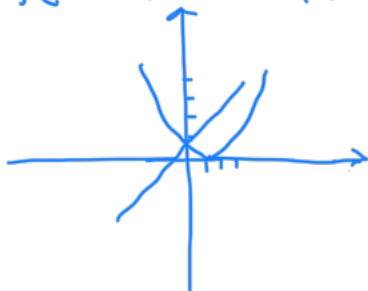
$$h(t) = -10t^r + 200t \Rightarrow y_s = \frac{-2000}{-20} = 100 \rightarrow h_{\max}$$

$$\underline{h=0} \rightarrow -10t^r + 200t = 0 \rightarrow t(200 - 10t) = 0 \rightarrow t = 0$$

$$t = 20$$

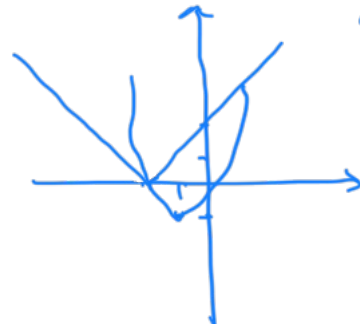
9

$$\text{الف) } (n-1)^r = r(n+1)$$



$$\text{ب) } n^r + r n = |n+r| \rightarrow n = -r$$

$n=1$



10