

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

-۱

$$\max = 7 \Rightarrow \frac{-\Delta}{2a} = 7 \Rightarrow \frac{-b^2 + 4ac}{2a} = 7$$

۵

$$-b^2 - 12 = -28 \Rightarrow -b^2 + 16 = 0 \Rightarrow b^2 = 16$$

$$\Rightarrow b = \pm 4$$

-۲

$$f(x) = x^2 + 2x + 3$$

$$x^2 = t \Rightarrow t^2 + 2t + 3$$

$$\Delta < 0 \Rightarrow \text{فصلی ندارد}$$

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$$f(x) = (x^2 - 1) - 2(x^2 - 1) - 12$$

$$\Rightarrow t^2 - 2t - 12 \Rightarrow (t - 6)(t + 2) \Rightarrow t = 6 \quad t = -2$$

$$\Rightarrow x^2 - 1 = 6 \Rightarrow x^2 + 1 = 0 \Rightarrow x^2 = -1 \quad \text{خارج از حیطه}$$

$$x^2 - 1 = -2 \Rightarrow x^2 - 1 = 0 \Rightarrow x^2 = 1 \Rightarrow x = \pm 1$$

-۳

$$5x^2 - 14x + m = 0$$

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$$\alpha + 2 = \beta \Rightarrow S = \alpha + \beta = 2\alpha + 2$$

$$S = \frac{-b}{a} = \frac{14}{5} = 2.8 \quad 2\alpha + 2 = 2.8 \Rightarrow \alpha = 0.4$$

$$\alpha = 1, \beta = 3 \Rightarrow P = \alpha \cdot \beta = \frac{c}{a} = 3 \Rightarrow \frac{m}{5} = 3$$

$$\Rightarrow m = 15$$

$$5x^2 - 14x + 15 = 0 \quad \Delta > 0$$

$$r^2 n^2 - 4n + m - 1 = 0$$

$$r\alpha - \beta = \varepsilon$$

-2

$$\alpha + \beta = r\alpha - \varepsilon$$

$$\Rightarrow \beta = r\alpha - \varepsilon$$

(1, 10)

$$\alpha + \beta = \frac{-(-4)}{r} = r \Rightarrow r\alpha - \varepsilon = r \Rightarrow \alpha = r$$

$$\boxed{\alpha = r}$$

$$\boxed{\beta = 0}$$

$$\Rightarrow \alpha \cdot \beta = 0 \Rightarrow \frac{m-1}{r} = 0$$

$$\Rightarrow \boxed{m = 1} \quad r^2 n^2 - 4n = 0 \quad \Delta > 0 \quad \checkmark$$

-3

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

$$\alpha \cdot \beta = 1 \quad (= \text{cuz } \alpha \beta = 1)$$

$$\Rightarrow \frac{c}{a} = \frac{m^2 - r}{-m} = 1 \Rightarrow m^2 + m - r = 0$$

$$(m + r)(m - 1) = 0 \Rightarrow m = -r \quad \text{or} \quad m = 1$$

(X)

(\checkmark)

if $m = -r \Rightarrow r n^2 + 2n + r = (\sqrt{r}n + \sqrt{r})^2 \Rightarrow 1$ \(\overline{\text{minimize}}\)

if $m = 1 \Rightarrow -n^2 + 2n - 1 \Rightarrow \Delta > 0 \Rightarrow \checkmark \quad \boxed{m = 1}$

-4

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

$$\alpha \beta^r = \varepsilon$$

$$\alpha \cdot \beta = r \Rightarrow (\underbrace{\alpha \beta}_r) \beta = \varepsilon \Rightarrow \beta = \frac{\varepsilon}{r} \quad , \quad \alpha = \frac{r}{\varepsilon}$$

$$\Rightarrow \alpha + \beta = \frac{r}{\varepsilon} + \frac{\varepsilon}{r} = \frac{r^2 + \varepsilon^2}{r\varepsilon} = \frac{\Sigma r}{r\varepsilon}$$

(1, 10)

$$\frac{-(-m)}{1} = \left(\frac{\Sigma r}{r\varepsilon} \right) = m$$

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

$$m^2 - \varepsilon m + m = 0$$

-V

$$\alpha = \alpha, \beta = \sqrt{\alpha} \Rightarrow \alpha + \beta = \varepsilon \alpha = \frac{-(1-\varepsilon)}{1} \Rightarrow \alpha = 1$$

(1, \sqrt{0})

$$\alpha = 1, \beta = \sqrt{\alpha} \Rightarrow \alpha \cdot \beta = \sqrt{\alpha} \Rightarrow \frac{m}{1} = \sqrt{\alpha} \Rightarrow m = \sqrt{\alpha}$$

$$2^{\sqrt{\alpha}} - \sqrt{\alpha} + \sqrt{\alpha} = 0 \checkmark$$

-A

$$m^2 - \nu m + \nu = 0$$

$$\alpha^{\sqrt{\alpha}} + \frac{1}{\alpha^{\sqrt{\alpha}}}$$

$$\alpha \cdot \beta = \nu \Rightarrow \beta = \frac{\nu}{\alpha} \Rightarrow \frac{1}{\alpha^{\sqrt{\alpha}}} = \beta^{\sqrt{\alpha}}$$

(3)

$$\Rightarrow \alpha^{\sqrt{\alpha}} + \beta^{\sqrt{\alpha}} = (\alpha + \beta) \cdot (\alpha^{\sqrt{\alpha}} + \beta^{\sqrt{\alpha}} - \alpha\beta) = \nu \times \varepsilon \nu = \frac{\nu}{1}$$

$$\Rightarrow \alpha + \beta = \nu$$

$$\alpha^{\sqrt{\alpha}} + \beta^{\sqrt{\alpha}} = S^{\sqrt{\alpha}} - \nu P = \varepsilon \alpha - \nu(\nu) = \varepsilon \omega$$

-9

$$h(t) = \gamma t^{\sqrt{\alpha}} + \omega t$$

$$b) h(t) = 0 \Rightarrow t(-10t^{\sqrt{\alpha}} + \omega) = 0 \Rightarrow t = 0 \times$$

$$t = \omega$$

(5)

$$c) h_{\max} = \frac{-\Delta}{\varepsilon \alpha} = \frac{-b^{\sqrt{\alpha}} + \frac{\omega^2}{4\varepsilon \alpha}}{\varepsilon \alpha} = -\frac{\nu \omega \omega}{-2\varepsilon \alpha}$$

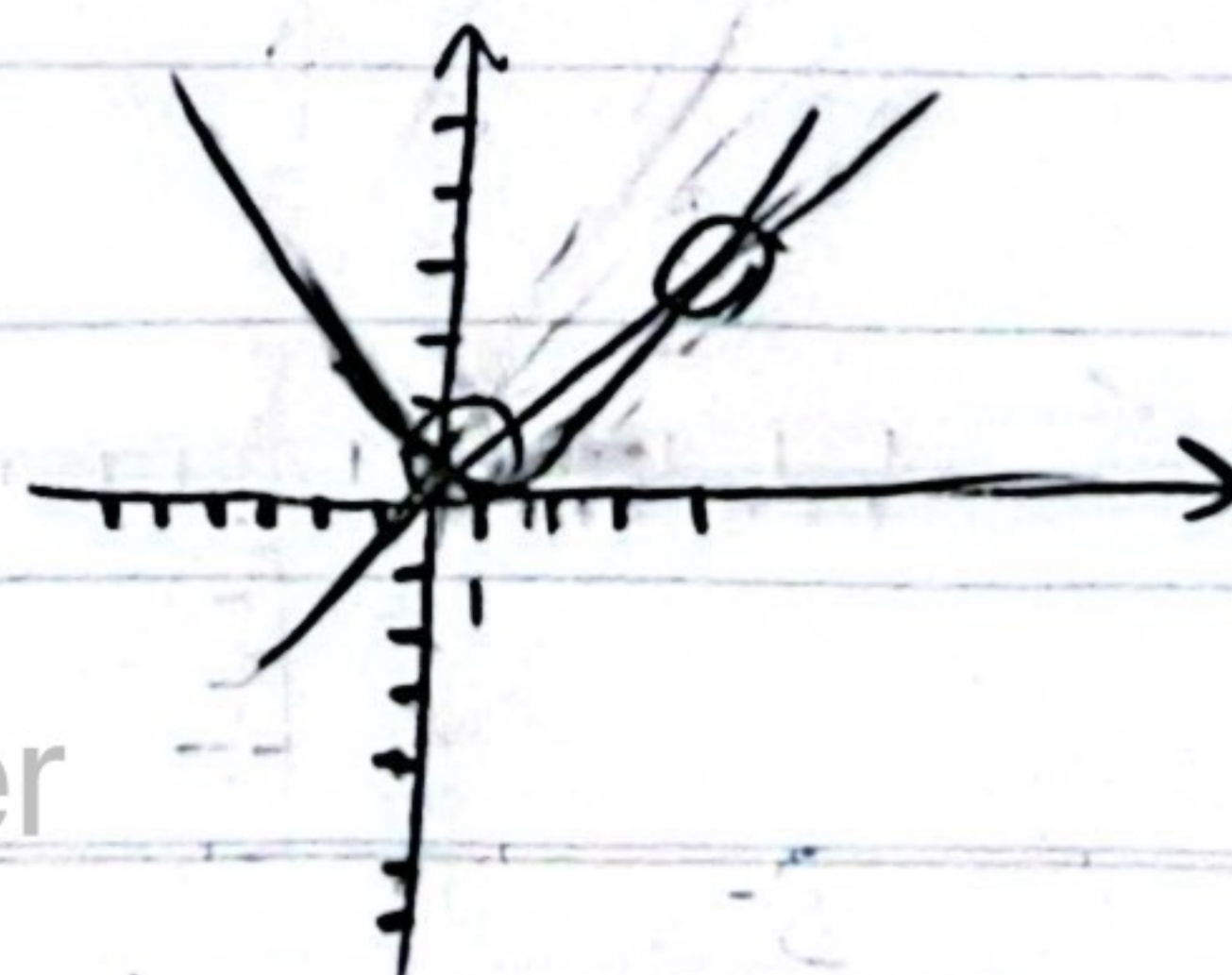
4 \nu \omega

$$d) (n-1)^{\sqrt{\alpha}} = \nu n + 1$$

$$n^{\sqrt{\alpha}} - \nu n + 1 = \nu n + 1$$

$$n^{\sqrt{\alpha}} - \varepsilon n = 0 \Rightarrow n(n-2)$$

$$\Rightarrow n = 0 \quad n = 2$$



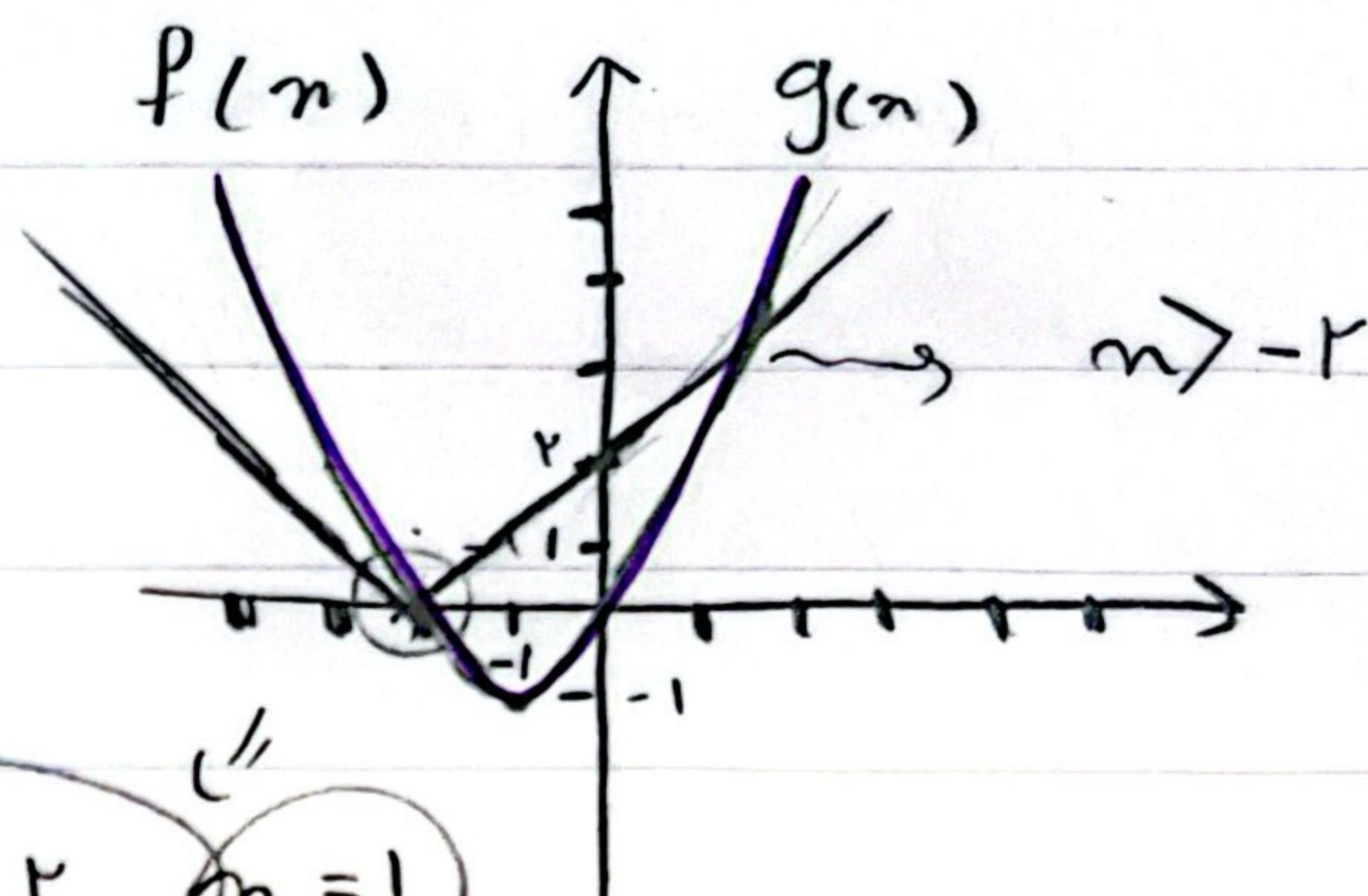
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(5)

$$\hookrightarrow n^2 + rn = |n+r|$$

$$f(n) = n^2 + rn$$

$$g(n)$$



$$n_s = \frac{-b}{2a} = \frac{-r}{2} = -1$$

$$n = -1 \quad n = 1$$

$$y_s = 1 - r = -1$$

$$\Rightarrow n^2 + rn = n + r$$

$$n^2 + n - r = 0 \Rightarrow (n+r)(n-1)$$

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