

$S \mid -\frac{b}{2a}$

$a > 0$
min

الف) $y = \epsilon n^2 - \epsilon n + 1$

$-\frac{b}{2a} = \frac{\epsilon}{\epsilon} = 1 = n_{min}$

$\epsilon \times 1 - \epsilon \times 1 + 1 = -1 = y_{min}$

14, 25

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ب) $y = -\epsilon n^2 + \epsilon n + \omega$

$a < 0$
max

$-\frac{b}{2a} = \frac{-\omega}{-\epsilon} = \frac{\omega}{\epsilon} = n_{max}$

$-\epsilon \times \frac{\omega}{\epsilon} + \frac{\omega}{\epsilon} + \omega = \frac{-\omega + \omega}{\epsilon} + \omega = \frac{\omega}{\epsilon} = y_{max}$

$-\frac{\omega}{\epsilon} + \omega = -\frac{\omega}{\epsilon}$

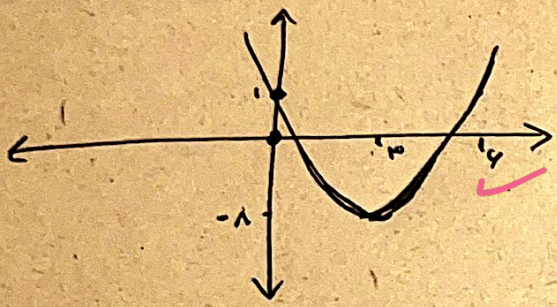
$a > 0$ min

الف) $y = n^2 - 4n + 1$

$S \mid -\frac{b}{2a} = \frac{4}{2} = 2 = n_{min}$

$1 - 16 + 1 = -14 = y_{min}$

n	0	2	4
y	1	-14	1



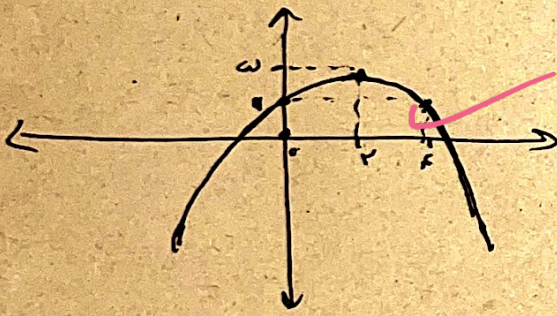
ب) $y = -n^2 + \epsilon n + 1$

$a < 0$ max

$S \mid -\frac{b}{2a} = \frac{-\epsilon}{-2} = \frac{\epsilon}{2} = n_{max}$

$-\epsilon + \epsilon + 1 = 1 = y_{max}$

n	0	$\frac{\epsilon}{2}$	ϵ
y	1	1	1



(3) معادله درجه سه است که سه ریشه دارد. $(n^2 + bn + c)$ درجه دوم \leftarrow

$n^2 + (1)n + (-1) = 0$

$(n-1)(n+1) = 0 \rightarrow n = 1, -1 \rightarrow S = 1, P = -1$

$y = \epsilon n^2 + k n^2 - 9n - 2 = 0$

$n = -1, y = 0 \rightarrow \epsilon(-1)^2 + k(-1)^2 - 9(-1) - 2 = 0 \rightarrow \epsilon + k + 7 = 0 \rightarrow \epsilon + k = -7$

$y = \epsilon n^2 + k n^2 - 9n - 2 = 0$

$n = 2, y = 0 \rightarrow \epsilon(2)^2 + k(2)^2 - 9(2) - 2 = 0 \rightarrow 4\epsilon + 4k - 18 - 2 = 0 \rightarrow 4\epsilon + 4k = 20 \rightarrow \epsilon + k = 5$

$\epsilon = -11, k = 4$

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$$\frac{\sqrt{\Delta}}{a} = \frac{\sqrt{9m^2 - \epsilon m}}{a} = 1$$

$$9m^2 - \epsilon m - 1 = 0$$

$$\Delta = b^2 - 4ac$$

$$19 + 4\epsilon = 4\epsilon$$

$$n^2 - \epsilon m n + m = 0 \quad (4)$$

$$m_1 = \frac{\epsilon + \sqrt{\epsilon^2 - 4}}{2}$$

$$\frac{\epsilon + \sqrt{\epsilon^2 - 4}}{2} = \frac{\epsilon + \sqrt{\epsilon^2 - 4}}{2}$$

$$m_2 = \frac{\epsilon - \sqrt{\epsilon^2 - 4}}{2}$$

$$\frac{\epsilon - \sqrt{\epsilon^2 - 4}}{2} \rightarrow \frac{\epsilon - \sqrt{\epsilon^2 - 4}}{2}$$

$$y = \epsilon n^2 - m n - m = 0$$

$$\frac{y}{a} = \frac{-\epsilon \pm \sqrt{\epsilon^2 - 4}}{2}$$

$$m_1 = \frac{\epsilon \pm \sqrt{\epsilon^2 - 4}}{2}$$

$$\frac{-\epsilon \pm \sqrt{\epsilon^2 - 4}}{2}$$

→ $\frac{-\epsilon \pm \sqrt{\epsilon^2 - 4}}{2}$

(5)

$$\frac{9}{\epsilon a^2} - \frac{9}{\epsilon a} \times a = \frac{v}{\lambda}$$

$$\frac{9 - 9\lambda}{\epsilon a} \times \frac{\epsilon a^2}{\epsilon a} = \frac{v}{\lambda}$$

$$s \mid \frac{-b}{\epsilon a} = \frac{-v}{\epsilon a} = n_{min}$$

$$y = a n^2 + \epsilon n + a$$

(6)

① $a > 0 \rightarrow n_{min}$

$$-v \epsilon + \epsilon a^2 = \epsilon a \rightarrow \epsilon a^2 - \epsilon a - v = 0$$

$$f(\lambda a^2 - v a - \lambda) = 0 \rightarrow \lambda a^2 - v a - \lambda = 0$$

$$\Delta = b^2 - 4ac$$

$$4\epsilon a = (\epsilon a - \epsilon \lambda) - (-\lambda)$$

$$P = \frac{v + \epsilon a}{2}$$

$$n_1 = \frac{-(-v) + \sqrt{4\epsilon a}}{2}$$

$$n_2 = \frac{-(-v) - \sqrt{4\epsilon a}}{2}$$

$$\sqrt{\frac{-9}{\lambda}} = \frac{v - \epsilon a}{2}$$

$$4y = 4\epsilon n^2 - 4\epsilon n a + v$$

$$y = -a n^2 + \epsilon n a + v$$

$$s \mid \frac{-b}{\epsilon a} = \frac{-a}{\epsilon a} = -\frac{1}{\epsilon} = n_{max}$$

(8)

$$\rightarrow \frac{b}{\epsilon} - \frac{b}{\epsilon} - 1 = -\frac{a}{\epsilon} + \frac{a}{\epsilon} \rightarrow -1 = \frac{a}{\epsilon} \rightarrow a = -\epsilon$$

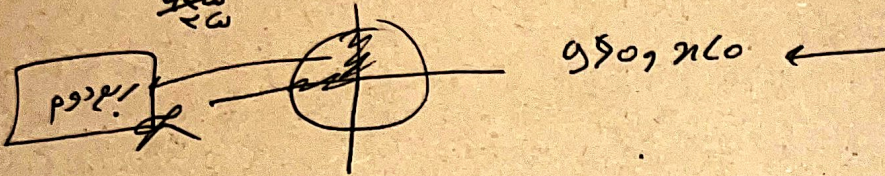
$$y = \epsilon b n^2 - b n - 1 \quad s \mid \frac{-b}{\epsilon a} = \frac{b}{\epsilon a} = \frac{1}{\epsilon} = n_{min}$$

$$b - a = 4 - (-1) = 5$$

$$\epsilon b a + 4 - \frac{b}{\epsilon} - 1 = \frac{b}{\lambda} - \frac{b}{\epsilon} - 1 = \frac{b}{\lambda} - \frac{b}{\epsilon} - 1 \rightarrow \frac{-b}{\lambda} = \frac{4}{\lambda} \rightarrow b = 4$$

$$S \left| -\frac{b}{ca} = \frac{-\varepsilon}{\omega a} = -\frac{\varepsilon}{\omega a}$$

$$y = \cancel{\omega a} x \frac{\cancel{\omega a}^{\varepsilon}}{\cancel{\omega a}^{\varepsilon}} + \varepsilon \frac{-\varepsilon}{\omega a} + \beta \Rightarrow \frac{\varepsilon}{\omega a} \frac{\varepsilon}{\omega a} + \beta$$



$$y = \varepsilon \omega a x + \varepsilon \omega a + \beta \quad (9)$$

$\beta > a$ and $a > 0$

$$S \left| \begin{array}{l} -\frac{\varepsilon}{\omega a} \rightarrow n < 0 \\ -\frac{\varepsilon}{\omega a} + \beta \rightarrow \beta > a \end{array} \right.$$

$\frac{\varepsilon}{\omega a} - \frac{\varepsilon}{\omega a} = -\frac{\varepsilon}{\omega a}$

$$\frac{c}{a} = \frac{a+b-1}{1} = a+b \rightarrow y$$

$$axb = y = \frac{c}{a} \leftarrow (a^r + b^r - 1) \rightarrow axb = y$$

$$a + b = V$$

$$\frac{1}{a} n^r - \underbrace{(a^r + b^r - 1)}_b \cdot n + \frac{a+b-1}{c} = 0$$

$$V \cdot a$$

$$P(7)$$

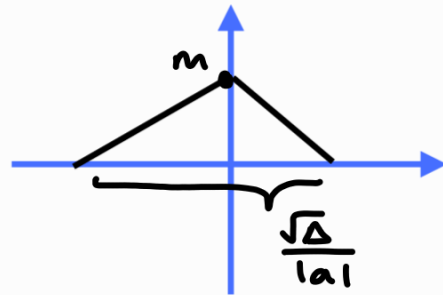
$$\sqrt{\alpha} - \sqrt{\beta} = 1 \xrightarrow{\text{توان ۲}} \alpha + \beta - 2\sqrt{\alpha\beta} = 1 \rightarrow \sqrt{m} - \sqrt{n} = 1 \quad (\sqrt{m} = t)$$

$$\sqrt{t}^2 - 2t - 1 = 0 \rightarrow t = 1 \quad \sqrt{m} = 1 \rightarrow m = 1$$

$$\hookrightarrow t = \frac{-1}{2}$$

$$\sqrt{n}^2 - m\sqrt{n} - m = 0 \rightarrow \sqrt{n}^2 - n - 1 = 0 \rightarrow \frac{c}{a} = \frac{-1}{1}$$

$$S = \frac{1}{r} \times m \times \frac{\sqrt{m^2 + r^2 - 2rm}}{r} = \left| \frac{\mu}{r} \right|$$



$$m|m-r| = |r| \rightarrow \begin{cases} m|m-r| = r & 1 \\ m|m-r| = -r & 2 \end{cases}$$

1 $m \geq r \rightarrow m^2 - 2rm - r^2 = 0 \rightarrow m = r$ if $m < r \rightarrow \Delta < 0$ غرور

2 $m \leq r \rightarrow -m^2 + 2rm + r^2 = 0 \rightarrow m = -1$ if $m > r \rightarrow \Delta < 0$ غرور

$$m = r \rightarrow y = x^2 + mx + r \rightarrow \mu S = \frac{-r}{r}$$

$$m = -1 \rightarrow y = x^2 - x + r \rightarrow \mu S = \frac{-1}{r}$$

$$x^2 - (a+1)x + a = 0 \xrightarrow{a+b+c=0} \begin{cases} x_1 = 1 \\ x_2 = a \end{cases} \quad \text{موردی که } a=3$$

$$x^2 - 1 \cdot x + b \xrightarrow{\text{موردی که } 2 \text{ ریشه زوج}} 2x + 2x + r = 1 \rightarrow x = 2 \rightarrow \text{ریشه ها ۲، ۲ است}$$

$$(4 \times 4) - (3 \times 1) = 16 - 3 = \boxed{13}$$

$$\frac{c}{a} = \frac{\beta}{\gamma\alpha} = \alpha\beta \rightarrow \alpha^2 = \frac{1}{\gamma\delta} \rightarrow \alpha = \pm \frac{1}{\sqrt{\delta}}$$

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$$-\frac{b}{a} = \frac{-\gamma}{\gamma\delta\alpha} = \alpha + \beta \rightarrow \alpha = \frac{1}{\delta} \rightarrow \beta = -1$$

$$\hookrightarrow \alpha = -\frac{1}{\delta} \rightarrow \beta = 1 \checkmark (\beta > \alpha)$$

$$y = -\alpha x^2 + \epsilon_{n+1} \rightarrow \begin{cases} x_S = \frac{4}{1} \text{ مثبت} \\ y_S = \frac{-\Delta}{4a} = \frac{-(14+20)}{-2} = \frac{4}{5} \text{ مثبت} \end{cases}$$

★ راس سهم در نیمه اول است

$$a^2 + b^2 - 12 = a + b \rightarrow s^2 - 2p - 12 = s$$

10

$$a + b - 1 = ab \rightarrow s - 1 = p \rightarrow s^2 - 2s + 2 - 12 - s = 0$$

$$s^2 - 3s - 10 = 0 \rightarrow (s - 5)(s + 2) = 0$$

$$\begin{matrix} \downarrow & \downarrow \\ \checkmark s = 5 & s = -2 \end{matrix} \quad \text{با } a, b \text{ اعداد طبیعی هستند!}$$