

الف) $n^2 - 7n + 1 = 0 \xrightarrow{+1} n^2 - 7n + 9 = 1 \quad (n-3)^2 = 1 \quad n-3 = \pm 1 \begin{cases} \rightarrow 2 \\ \rightarrow 4 \end{cases}$

ب) $n^2 + 11n + 7 = 0 \xrightarrow{+9} n^2 + 11n + 14 = 9 \quad (n+4)^2 = 9 \quad n+4 = \pm 3 \begin{cases} \rightarrow -1 \\ \rightarrow -7 \end{cases}$

الف) $n^2 - 9n + 7 = 0 \quad (n-3)(n-2) = 0 \begin{cases} \rightarrow +3 \\ \rightarrow +2 \end{cases}$

ب) $n^2 - 9n - 14 = 0 \quad (n-7)(n+2) = 0 \begin{cases} \rightarrow +7 \\ \rightarrow -2 \end{cases}$

الف) $n^2 - 2n - 4 = 0 \quad \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow \frac{2 \pm \sqrt{4 + 16}}{2} = \begin{cases} \frac{2 + \sqrt{20}}{2} \\ \frac{2 - \sqrt{20}}{2} \end{cases}$

ب) $2n^2 - 2n + \frac{1}{2} = 0 \quad \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow \frac{2 \pm \sqrt{4 - 2}}{2} = \begin{cases} \frac{2 + \sqrt{2}}{2} \\ \frac{2 - \sqrt{2}}{2} \end{cases}$

الف) $n^2 - 2n + 2 = 0 \quad (n-1)(n-1) = 0 \begin{cases} \rightarrow 1 \\ \rightarrow 1 \end{cases} \quad \begin{cases} a+b+c=0 \\ 1-2+2=0 \end{cases} \begin{cases} \rightarrow +1 \\ \rightarrow \frac{c}{a}=2 \end{cases}$

ب) $2n^2 + n - 3 = 0 \quad \begin{cases} a+c=b \\ 2-3=1 \end{cases} \begin{cases} \rightarrow -1 \\ \rightarrow -\frac{c}{a} = \frac{3}{2} \end{cases}$

~~الف) $n^2 - 12n + 11 = 0 \quad (n-1)(n-11) = 0 \begin{cases} \rightarrow n=1 \\ \rightarrow n=11 \end{cases}$~~
الف) $n^2 - 12n + 7 = 0 \quad (n-7)(n-5) = 0 \begin{cases} \rightarrow n=7 \\ \rightarrow n=5 \end{cases}$

ب) $2n^2 - 10n + 7 = 0 \quad n^2 - 5n + \frac{7}{2} = 0 \quad (n-2)(n-3) = 0 \begin{cases} \rightarrow 2 \\ \rightarrow 3 \end{cases}$

$$n^2 - 2n + 1 = 0 \quad \Delta = b^2 - 4ac \quad 2^2 - 4 \cdot 1 = 0 \quad \text{الف}$$

$$n^2 - n + 1 = 0 \quad \Delta = b^2 - 4ac \quad 1 - 4 = -3 \quad \text{صفر نیست}$$

$$n^2 - 2n + 1 = 0 \quad \Delta = b^2 - 4ac \quad 4 - 4 = 0 \quad \text{یک ریشه مضاعف}$$

$$n^2 - n + 1 = 0 \quad \Delta = b^2 - 4ac \quad 1 - 4 = -3 \quad \text{صفر نیست}$$

$$n^2 - 2n + a = 0$$

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

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

$$9 - 4a \geq 0$$

$$a = \{R \mid 1\}$$

$$a = 0 \quad \Delta > 0$$

الف

$$9 - 4a = 0$$

$$a = \frac{9}{4}$$

$$a = \frac{9}{4}$$

$$\Delta = 0$$

ب

$$9 - 4a < 0$$

$$a = \{R \mid 1\}$$

$$a = 2$$

$$\Delta < 0$$

ج

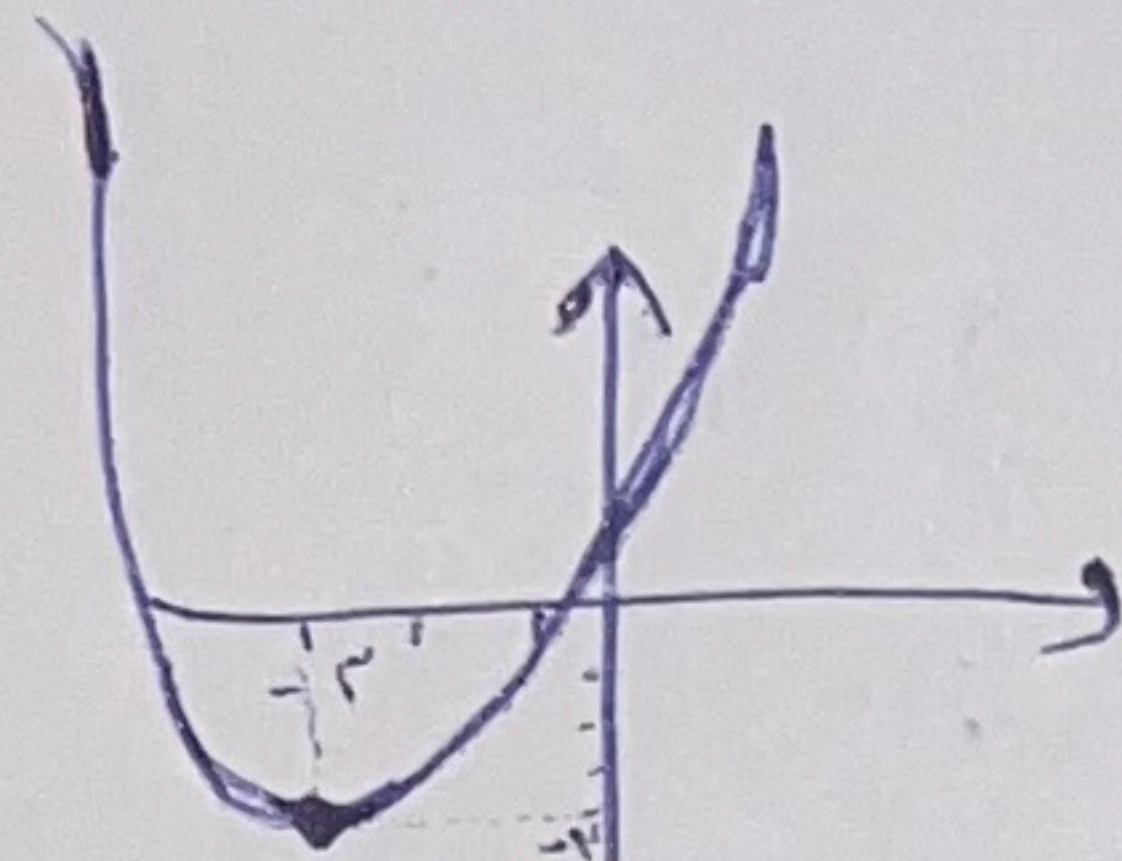
$$a = -1$$

د

$$y = n^2 + 4n + a$$

$$a) \min \left| \begin{matrix} -\frac{b}{2a} \\ -\frac{\Delta}{4a} \end{matrix} \right| \begin{matrix} -3 \\ -2 \end{matrix}$$

الف



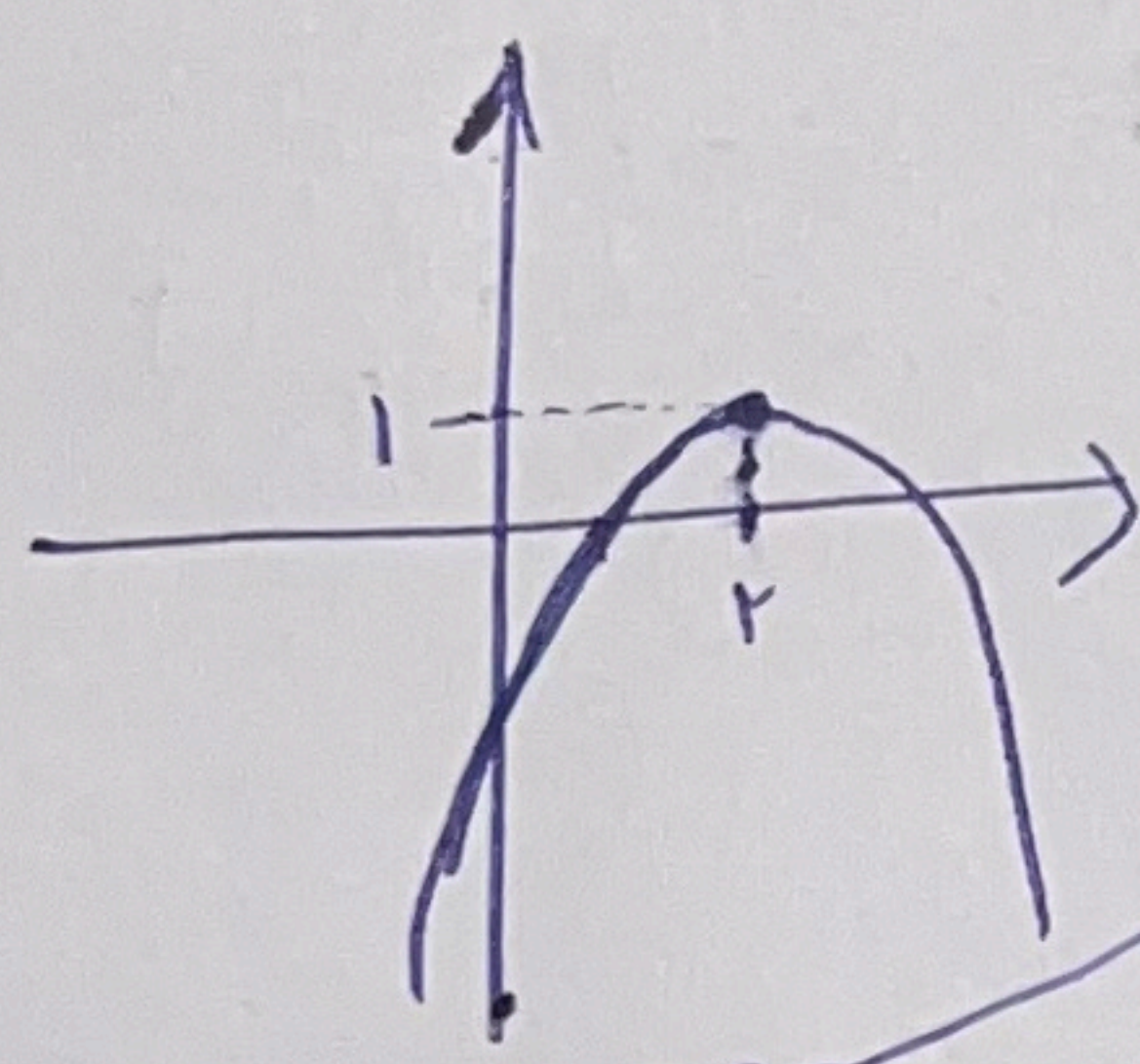
ب

$$y = -n^2 + 2n - 2$$

$$a < 0$$

$$\max \left| \begin{matrix} -\frac{b}{2a} \\ -\frac{\Delta}{4a} \end{matrix} \right| \begin{matrix} -\frac{1}{2} = 2 \\ 1 \end{matrix}$$

الف



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

ب

$$n^2 - 2n - 2 = 0$$

$$S = -\frac{b}{a} = 2 \quad P = \frac{c}{a} = -2$$

$$\text{الف) } S^2 - 2P = 9 - (-4) = 13$$

$$\text{ب) } S^2 - 2SP = 4 - 2(2 \cdot -2) = 4 + 8 = 12$$

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