

(الف)

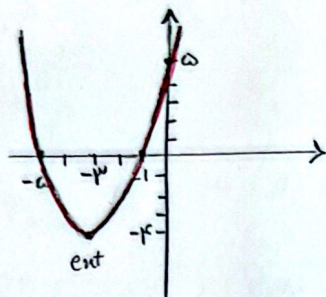
$$\min \left| x = \frac{-b}{2a} = \frac{-6}{2} = -3 \right.$$

$$y = 9 - 11 + 5 = -4$$

جایگزینی x

$$\left. \begin{array}{l} -3 \\ -4 \end{array} \right\}$$

مقیات
نقطه ext



(ب)

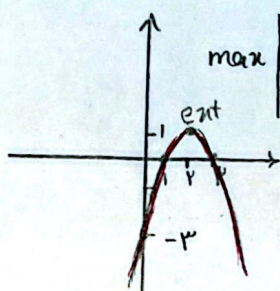
(الف)

$$\max \left| x = \frac{-b}{2a} = \frac{-4}{-2} = 2 \right.$$

$$y = -4 + 11 - 3 = 1$$

$$\left. \begin{array}{l} 2 \\ 1 \end{array} \right\}$$

مقیات
نقطه ext



$$y = -x^2 + 4x - 3 \rightarrow x^2 - 4x + 3 = 0$$

$$\leadsto (x-1)(x-3) = 0 \rightarrow x = 1, 3$$

$$\left| \begin{array}{l} 1 \\ 3 \end{array} \right|$$

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$$a+b+c=0 \Rightarrow \frac{c}{a} = -\frac{a+b}{a} \Rightarrow x = 3$$

$$\Delta = 0 \leadsto b^2 - 4ac = 0 \leadsto 9 - 11a = 0 \rightarrow a = \frac{9}{11} \quad (ب)$$

$$\hookrightarrow b^2 - 4ac$$

$$\hookrightarrow 9 = 11a$$

$$\Delta > 0 \rightarrow 9 - 11a > 0 \rightarrow 9 > 11a \quad (الف)$$

$$\hookrightarrow b^2 - 4ac$$

$$\leadsto a < \frac{9}{11}$$

★

$$\Delta \geq 0 \leadsto b^2 - 4ac \geq 0 \rightarrow 9 - 11a \geq 0 \rightarrow a \leq \frac{9}{11} \quad (د)$$

$$\Delta \geq 0$$

$$\leadsto b^2 - 4ac$$

$$\geq 0$$

$$\rightarrow 9 - 11a$$

$$\geq 0$$

$$\rightarrow a \leq \frac{9}{11}$$

$$\quad (د)$$

$$\Delta < 0 \leadsto b^2 - 4ac < 0 \rightarrow 9 - 11a < 0 \rightarrow a > \frac{9}{11} \quad (ج)$$

$$\Delta < 0$$

$$\leadsto b^2 - 4ac$$

$$< 0$$

$$\rightarrow 9 - 11a$$

$$< 0$$

$$\rightarrow a > \frac{9}{11}$$

$$\quad (ج)$$

$$(الف) \quad x^2 - 2x - 1 = 0 \rightarrow x^2 - 2x - 1 + 2 = +2 \rightarrow (x-1)^2 = 2 \rightarrow x = 1 \pm \sqrt{2}$$

$$(ب) \quad x^2 - x - 1 = 0 \rightarrow x^2 - x - 1 + \frac{1}{4} = \frac{5}{4} \rightarrow (x - \frac{1}{2})^2 = \frac{5}{4} \rightarrow x = \frac{1 \pm \sqrt{5}}{2}$$

$$-2(\frac{1}{2}x)$$

$$(الف) \quad x^2 - 2x - 1 = 0 \rightarrow \Delta = b^2 - 4ac \Rightarrow 4 + 4 = 8 \rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$$

$$(ب) \quad x^2 + x - 1 = 0 \rightarrow \Delta = b^2 - 4ac \Rightarrow 1 + 4 = 5 \rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-1 \pm \sqrt{5}}{2}$$

$$\text{الف) } x^2 - 11x + 28 = 0 \rightarrow (x-4)(x-7) = 0 \rightarrow x = 4 \leq 7$$

9

$$\text{ب) } x^2 + 3x - 28 = 0 \rightarrow (x+7)(x-4) = 0 \rightarrow x = 4 \leq (-7)$$

$$\text{الف) } 5x^2 - 12x + 7 = 0 \rightarrow x^2 - 12x + 14 = 0 \rightarrow (x-5)(x-7) = 0 \rightarrow x = 5 \leq 7 \Rightarrow x = 1 \leq \frac{7}{5}$$

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$$\text{ب) } 3x^2 - 10x + 7 = 0 \rightarrow x^2 - 10x + 21 = 0 \rightarrow (x-3)(x-7) = 0 \rightarrow x = 3 \leq 7 \Rightarrow x = 1 \leq \frac{7}{3}$$

$$\text{الف) } 2x^2 - 5x + 3 = 0 \rightarrow x^2 - 5x + 6 = 0 \rightarrow (x-2)(x-3) = 0 \rightarrow x = 2 \leq 3 \Rightarrow x = 1 \leq \frac{3}{2}$$

$$\text{ب) } 2x^2 + 5x + 3 = 0 \rightarrow x^2 + 5x + 6 = 0 \rightarrow (x+2)(x+3) = 0 \rightarrow x = -1 \leq -3 \Rightarrow x = -1 \leq -\frac{3}{2}$$

* $\frac{c}{a} = \frac{3}{2} = 1.5$

* $\frac{-c}{a} = -\frac{3}{2} = -1.5$

1

$$\text{ج) } 2x^2 - 5x + 1 = 0 \rightarrow \Delta = b^2 - 4ac = 25 - 4 = 21 \rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{5 \pm \sqrt{21}}{4}$$

$$\text{د) } 2x^2 + 7x + 9 = 0 \rightarrow \Delta = b^2 - 4ac = 49 - 72 = -23 \rightarrow \Delta < 0$$

$$\text{الف) } x^2 - 3x - 2 = 0 \rightarrow \Delta = b^2 - 4ac = 9 + 8 = 17 \rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{3 \pm \sqrt{17}}{2} \Rightarrow S = \frac{3 + \sqrt{17} + 3 - \sqrt{17}}{2} = 3 \left\{ P = \frac{(3 + \sqrt{17})(3 - \sqrt{17})}{4} = -\frac{5}{4} \right\}$$

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

$$\text{الف) } S = -\frac{b}{a} / P = \frac{c}{a} \Rightarrow -\frac{(-3)}{1} = 3 / -\frac{2}{1} = -2 \Rightarrow S = 3 \left\{ P = (-2) \right\}$$

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$$\text{ب) } S^3 - 3SP = (3)^3 - 3 \times (-2) = 27 + 6 = 33$$

$$\text{الف) } \binom{5}{5} + \binom{9}{2} = \frac{5!}{5! \times 2!} + \frac{9!}{2! \times 7!} = 1 + 36 = 37$$

$$\text{الف) } \binom{n}{r} = \frac{n!}{r! \times (n-r)!}$$

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$$\text{ب) } \binom{9}{3} - \binom{1}{2} = \frac{9!}{3! \times 6!} - \frac{1!}{2! \times 1!} = 84 - 1 = 83$$