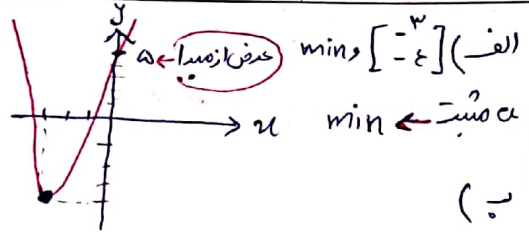
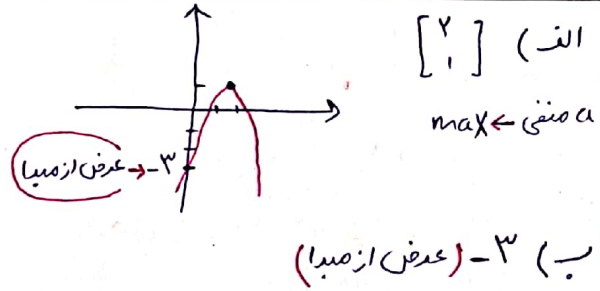


$$\text{ext} \left| \begin{aligned} x &= \frac{-b}{2a} = \frac{-4}{2} = -2 \rightarrow [-2] \\ y &= 9 + a - 11 = -2 \end{aligned} \right.$$



$$\text{ext} \left| \begin{aligned} x &= \frac{-b}{2a} = \frac{-4}{-2} = 2 \rightarrow [2] \\ y &= -4 + 11 - 3 = 4 \end{aligned} \right.$$



$$2x^2 - 3x + a = 0$$

الف) $\Delta > 0 \rightarrow \Delta = b^2 - 4ac \rightarrow 9 - 12a > 0 \rightarrow \frac{9}{12} > a \rightarrow \frac{3}{4} > a$
 ب) $\Delta = 0 \rightarrow \Delta = b^2 - 4ac \rightarrow 9 - 12a = 0 \rightarrow \frac{9}{12} = a \rightarrow \frac{3}{4} = a$
 ج) $\Delta < 0 \rightarrow \Delta = b^2 - 4ac \rightarrow 9 - 12a < 0 \rightarrow \frac{9}{12} < a \rightarrow \frac{3}{4} < a$
 د) $\Delta \geq 0 \rightarrow 9 - 12a \geq 0 \rightarrow \frac{9}{12} \geq a \rightarrow \frac{3}{4} \geq a$

الف) $x^2 - 2x - 1 = 0 \rightarrow x^2 - 2x - 1 + 2 = 0 + 2 \rightarrow x^2 - 2x + 1 = 2$

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

$$\rightarrow x = 1 - \sqrt{2}$$

ب) $x^2 - x - 1 = 0 \rightarrow x^2 - x - 1 + \frac{a}{4} = 0 + \frac{a}{4} \rightarrow x^2 - x + \frac{1}{4} = \frac{a}{4}$

$$\rightarrow (x - \frac{1}{2})^2 = \frac{a}{4} \rightarrow x - \frac{1}{2} = \pm\sqrt{\frac{a}{4}} \rightarrow x = \sqrt{\frac{a}{4}} + \frac{1}{2}, x = \frac{1}{2} - \sqrt{\frac{a}{4}}$$

الف) $x^2 - 2x - 1 = 0$

$$\Delta \Rightarrow 4 - (4 \times 1 \times -1) = 4 + 4 = 8$$

$$x = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$$

$$x = \frac{2 - \sqrt{8}}{2} = 1 - \sqrt{2}$$

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

$$x = \frac{-b \pm \sqrt{\Delta}}{2a}$$

ب) $x^2 + x - 4 = 0$

$$\Delta = 1 - (4 \times 1 \times -4) = 1 + 16 = 17$$

$$x = \frac{-1 \pm \sqrt{17}}{2}$$

$$x = \frac{-1 - \sqrt{17}}{2}$$

$$\text{الف) } x^2 - 11x + 28 = 0$$

$$\Rightarrow (x - 4)(x - 7) \Rightarrow \begin{cases} x = 4 \\ x = 7 \end{cases}$$

میان دو عدد 4 و 7 هر کدام را برابر با
صفت قرار می دهیم

$$\text{ب) } x^2 + 3x - 28 = 0$$

$$\Rightarrow (x + 7)(x - 4) = 0$$

$$\Rightarrow \begin{cases} x + 7 = 0 \rightarrow x = -7 \\ x - 4 = 0 \rightarrow x = 4 \end{cases}$$

$$\text{الف) } ax^2 - 14x + 7 = 0 \Rightarrow x^2 - 14x + 7a = 0 \Rightarrow (x - 7)(x - a) = 0$$

$$\text{ب) } 3x^2 - 10x + 7 = 0 \Rightarrow \begin{cases} x - 7 = 0 \rightarrow x = 7 \rightarrow x = \frac{7}{3} \\ x - a = 0 \rightarrow x = a \rightarrow x = \frac{a}{3} = 1 \end{cases}$$

$$\Rightarrow x^2 - 10x + 21 = 0$$

$$\Rightarrow (x - 7)(x - 3) = 0 \Rightarrow \begin{cases} x - 7 = 0 \rightarrow x = 7 \rightarrow x = \frac{7}{3} \\ x - 3 = 0 \rightarrow x = 3 \rightarrow x = \frac{3}{3} = 1 \end{cases}$$

$$\text{الف) } 2x^2 - ax + 3 = 0 \xrightarrow{\text{جمع ضرایب صفر}} \boxed{x = 1}, x = \frac{c}{a} = \frac{3}{2}$$

$$\text{ب) } 2x^2 + ax + 3 = 0 \xrightarrow{a+c=b} \boxed{x = -1}, x = \frac{-c}{a} = -\frac{3}{2}$$

$$\text{ج) } 2x^2 - ax + 1 = 0 \xrightarrow{\Delta} \Delta = b^2 - 4ac \rightarrow \Delta = 4a - (4 \times 2 \times 1) = 4a - 8$$

$$\text{د) } 4x^2 + 7x + 9 = 0 \xrightarrow{\Delta} \Delta = b^2 - 4ac = 49 - 4 \times 4 \times 9 = 49 - 144 = -95$$

X جواب ندارد این معادله چون دلتا منفی است

$$x^2 - 3x - 2 = 0 \xrightarrow{\text{جمع ضرایب صفر}} \frac{b}{a} = 3$$

$$\xrightarrow{\text{ضرب ضرایب صفر}} \frac{c}{a} = -2$$

$$S = \frac{-b}{a} : \text{جمع ضرایب صفر}$$

$$P = \frac{c}{a} : \text{ضرب ضرایب صفر}$$

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

$$\text{ب) } S^3 - 3SP = 27 - (3 \times 3 \times -2) = 27 - (-18) = 27 + 18 = 45$$

$$\text{الف) } \binom{7}{5} + \binom{9}{2} = \frac{7!}{5! \times 2!} + \frac{9 \times 8 \times 7!}{2 \times 7!} = 21 + 36 = 57 \quad \binom{n}{k} = \frac{n!}{k! (n-k)!}$$

$$\text{ب) } \binom{9}{3} - \binom{1}{2} = \frac{9!}{3! \times 6!} - \frac{1 \times 0!}{2 \times 0!} = 84 - 1 = 83$$