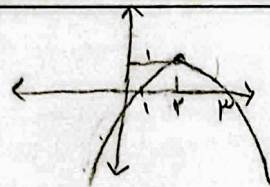
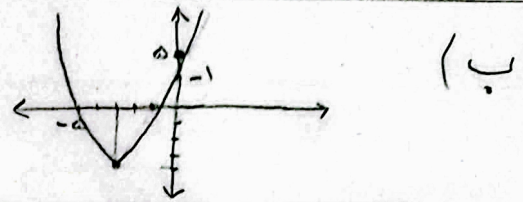


$$\min \left[\begin{matrix} -3 \\ -4 \end{matrix} \right] \Leftarrow \text{ext} \left| \begin{matrix} \frac{-b}{2a} = \frac{-4}{2} = -3 \\ \frac{-\Delta}{4a} = -4 \end{matrix} \right. \quad y = x^2 + 4x + 5 \quad (\text{الف})$$



$$\text{ext} \left| \begin{matrix} \frac{-b}{2a} = 2 \\ 1 \end{matrix} \right. \quad y = -x^2 + 4x - 3 \quad (\text{الف})$$

$$\Delta = 16 - 4(3) = 4 \quad (\text{ب}) \quad 3 \text{ و } 1$$

$$\frac{-4 \pm 2}{-2} \Leftarrow x = \frac{-4 \pm \sqrt{4}}{-2} = 1 \text{ و } 3$$

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

$$\Delta = b^2 - 4ac \rightarrow 9 - 4(2a) = 9 - 8a > 0 \Rightarrow 9 > 8a \Rightarrow \frac{9}{8} > a \quad (\text{الف})$$

a باید هر عددی کمتر از $\frac{9}{8}$ باشد

$$9 - 4(2a) = 9 - 8a = 0 \rightarrow 9 = 8a \rightarrow \frac{9}{8} = a \quad \Delta = 0 \quad (\text{ب})$$

$$9 - 8a < 0 \rightarrow 9 < 8a \rightarrow a > \frac{9}{8} \quad \Delta < 0 \quad (\text{ج})$$

a هر عددی بزرگتر از $\frac{9}{8}$

$$\Delta > 0 \quad (\text{د}) \rightarrow \frac{9}{8} > a \rightarrow \text{باید به عبارات بالا}$$

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

$$\text{ب} \quad x^2 - x - 1 = 0 \xrightarrow{+\frac{1}{4}} x^2 - x + \frac{1}{4} = \frac{5}{4} \rightarrow \left(x - \frac{1}{2}\right)^2 = \frac{5}{4}$$

$$x - \frac{1}{2} = \pm\sqrt{\frac{5}{4}} \rightarrow x - \frac{1}{2} = \pm\frac{\sqrt{5}}{2} \Rightarrow x = \frac{1 \pm \sqrt{5}}{2}$$

$$\text{الف} \quad x^2 - 2x - 1 = 0 \quad \left\{ \begin{matrix} \Delta = b^2 - 4ac \\ 4 + 4 = 8 = \Delta \end{matrix} \right\} \Rightarrow \frac{2 \pm \sqrt{8}}{2} = x$$

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

$$\text{ب} \quad x^2 + x - 4 = 0 \rightarrow 1 - 4(-4) = 17 = \Delta \Rightarrow \frac{-1 \pm \sqrt{17}}{2} = x$$

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

الف) $x^2 - 11x + 28 = 0 \rightarrow (x-7) (x-4) \rightarrow \begin{cases} x=7 \\ x=4 \end{cases}$

ب) $x^2 + 3x - 28 = 0 \rightarrow (x+7) (x-4) \rightarrow \begin{cases} x=-7 \\ x=4 \end{cases}$

الف) $5x^2 - 12x + 7 = 0 \Rightarrow x^2 - 12x + 35 = 0 \rightarrow (x-7) (x-5) = 0$
 $\begin{cases} x=7 \\ x=5 \end{cases} \div 5 \Rightarrow \begin{cases} x = \frac{7}{5} \\ x = 1 \end{cases}$

ب) $3x^2 - 10x + 7 = 0 \Rightarrow x^2 - 10x + 21 = 0 \rightarrow (x-3) (x-7) = 0$
 $\begin{cases} x=3 \\ x=7 \end{cases} \div 3 = a \Rightarrow \begin{cases} x=1 \\ x = \frac{7}{3} \end{cases}$

الف) $2x^2 - 5x + 3 = 0 \xrightarrow{\text{جمع فتراب}} \begin{cases} x=1 \\ x = \frac{3}{2} = \frac{c}{a} \end{cases}$

ب) $2x^2 + 5x + 3 = 0 \rightarrow a+c=b \rightarrow x=-1$
 $x = -\frac{c}{a} = -\frac{3}{2}$

ج) $2x^2 - 5x + 1 = 0 \xrightarrow{\Delta=17} x = \frac{5 \pm \sqrt{17}}{4}$

د) $4x^2 + 7x + 9 = 0 \xrightarrow{\Delta < 0}$ ریشه ندارد

الف) $S^2 - 2P = 9 + 4 = 13$

$S = \frac{p}{1} = 3 = -\frac{b}{a}$
 $P = \frac{c}{a} = -2$

ب) $S^3 - 3SP = 27 + 18 = 45$

الف) $\left(\frac{5}{2} \right) + \left(\frac{2}{9} \right) = \frac{5 \times 9 \times 2 \times 2 \times 2}{2 \times 9} = 11 + \frac{9 \times 2}{9} = 13$

ب) $\left(\frac{2}{9} \right) - \left(\frac{1}{2} \right) = \frac{2 \times 2 \times 2 \times 2 \times 2}{9 \times 2} = 12 - \frac{2 \times 2}{2} = 10$