

الف) $x^2 - 6x + 9 = 0 \rightarrow x^2 - 6x + 9 = 1 \rightarrow (x-3)^2 = 1 \rightarrow x-3 = \pm 1 \Rightarrow \begin{cases} x=4 \\ x=2 \end{cases}$
 (+1) (+1)
 $\sqrt{(x-3)^2} = \sqrt{1}$

ب) $x^2 + 8x + 7 = 0 \rightarrow x^2 + 8x + 16 = 9 \rightarrow \sqrt{(x+4)^2} = \sqrt{9} \rightarrow x+4 = \pm 3$
 (+4) (+4)
 $\begin{cases} x=-1 \\ x=-7 \end{cases}$

الف) $x^2 - 5x + 6 = 0 \rightarrow (x-2)(x-3) = 0 \rightarrow \begin{cases} x=3 \\ x=2 \end{cases}$

ب) $x^2 - 5x - 14 = 0 \rightarrow (x-7)(x+2) = 0 \rightarrow \begin{cases} x=7 \\ x=-2 \end{cases}$

الف) $x = \frac{3 \pm \sqrt{9 - 4(1)(-5)}}{2} \rightarrow x = \frac{3 \pm \sqrt{29}}{2}$

$x = \frac{-b \pm \sqrt{\Delta}}{2a}$
 (b² - 4ac)

ب) $x = \frac{f \pm \sqrt{14 - 4(1)(\frac{1}{f})}}{f} \rightarrow x = \frac{f \pm \sqrt{14}}{f}$

الف) $(x-2)(x-1) = 0 \rightarrow \begin{cases} x=2 \\ x=1 \end{cases}$

ب) $x = \frac{-1 \pm \sqrt{1}}{1} \rightarrow \frac{-1 \pm 1}{1} \rightarrow \begin{cases} x = \frac{0}{1} \\ x = -1 \end{cases}$

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

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

$$\Delta = b^2 - 4ac \quad \Delta > 0 \quad ((\text{دو ریشه حقیقی})) \quad \Delta = 25 - 12 = 13 \rightarrow 13 > 0 \quad \text{الف)}$$

$$\Delta < 0 \quad ((\text{بدون ریشه حقیقی})) \quad \Delta = 1 - 14 = -13 \rightarrow -13 < 0 \quad \text{ب)}$$

$$\Delta = 0 \quad ((\text{یک ریشه حقیقی})) \quad \Delta = 14 - 14 = 0 \quad \text{پ)}$$

$$\Delta < 0 \quad ((\text{بدون ریشه حقیقی})) \quad \Delta = 1 - 8 = -7 \rightarrow -7 < 0 \quad \text{ت)}$$

$$\Delta = (-3)^2 - 4(2)(a) = 9 - 8a$$

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

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

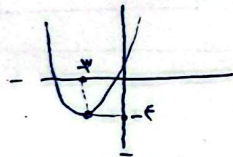
$$\text{ج)} \quad a > \frac{9}{8} \leftarrow 9 - 8a < 0 \leftarrow -8a < -9 \leftarrow a > \frac{9}{8}$$

$$\text{د)} \quad \Delta \geq 0 \rightarrow a \leq \frac{9}{8}$$

$$\text{الف)} \quad x = \frac{-b}{2a} \rightarrow -\frac{6}{2} = -3 \quad \left[-\frac{3}{4} \right]$$

$$y = (-3)^2 + 6(-3) + 5 = 9 - 18 + 5 = -4$$

ب)



$x^2 + 6x + 5$
min

$$\text{الف)} \quad x = \frac{-b}{2a} \rightarrow \frac{-f}{-2} = 1 \quad y = 1 \quad [2]$$

ب)



$-x^2 + 4x - 3$
max

$$S = \frac{-b}{a} = 3 \rightarrow \frac{3}{1} = 3$$

$$P = \frac{c}{a} = -2 \rightarrow \frac{-2}{1} = -2$$

$$\frac{1}{a}x^2 - \frac{3}{b}x - \frac{2}{c} = 0$$

$$\text{الف)} \quad 3^2 + 4 \rightarrow 9 + 4 = 13$$

$$\text{ب)} \quad 3^2 + 11 = 20$$