

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

ب) $x^2 + 8x + 14 - 4 = 0 \rightarrow (x+4)^2 - 9 = 0 \Rightarrow (x+4-3)(x+4+3) = 0$
 $(x+1)(x+7) = 0 \rightarrow x \begin{cases} -1 \\ -7 \end{cases}$

الف) $x^2 - 5x + 4 = 0 \rightarrow (x-1)(x-4) = 0 \Rightarrow x \begin{cases} 1 \\ 4 \end{cases}$

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

الف) $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \rightarrow x = \frac{+3 \pm \sqrt{9 + 20}}{2} \Rightarrow x \begin{cases} \frac{3 + \sqrt{29}}{2} \\ \frac{3 - \sqrt{29}}{2} \end{cases}$
 ب) $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \rightarrow x = \frac{4 \pm \sqrt{16 - 4}}{4} = \frac{4 \pm \sqrt{12}}{4} = \frac{1(4 \pm 2\sqrt{3})}{4} \Rightarrow x \begin{cases} \frac{4 + 2\sqrt{3}}{4} \\ \frac{4 - 2\sqrt{3}}{4} \end{cases}$
 $\sqrt{12} = 2\sqrt{3}$

الف) $x^2 - 3x + 2 = 0$ روش دو جمله‌ای $\rightarrow x \begin{cases} 1 \\ \frac{c}{a} = 2 \end{cases}$

ب) $4x^2 + x - 3 = 0$ روش دو جمله‌ای $\rightarrow x^2 + x - 12 = 0 \rightarrow (x-3)(x+4) = 0$
 $x \begin{cases} 3 \\ -4 \end{cases}$

الف) $5x^2 - 14x + 7 = 0 \xrightarrow{ac} x^2 - 14x + 49 = 0 \rightarrow (x-7)(x-7) = 0$
 $x \begin{cases} 7 \\ \frac{c}{a} = 7 \end{cases}$

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

$$\text{الف) } \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-5 \pm \sqrt{25 - 14}}{-9} = x \begin{cases} \frac{-5 - \sqrt{11}}{-9} \\ \frac{-5 + \sqrt{11}}{-9} \end{cases}$$

$$\text{ب) } \frac{+1 \pm \sqrt{1 - 4}}{2} \Rightarrow \Delta = \text{منفي} \rightarrow \text{جواب ندارد}$$

$$\text{ج) } \frac{+4 \pm \sqrt{16 - 16}}{2} \Rightarrow \left(\frac{4}{2}\right) = 1 = x$$

$$\text{د) } \frac{+1 \pm \sqrt{1 - 4}}{2} \Rightarrow \Delta = \text{منفي} \rightarrow \text{جواب ندارد}$$

$$\text{الف) } \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{3 \pm \sqrt{9 - 4a}}{2} \Rightarrow \begin{cases} 9 - 4a > 0 \\ -4a > -9 \end{cases} \rightarrow a < \frac{9}{4}$$

$$\text{ب) } 9 - 4a = 0 \rightarrow 9 = 4a$$

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

$$\text{ج) } 9 - 4a < 0 \rightarrow -4a < -9$$

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

$$\text{د) } 9 - 4a > 0$$

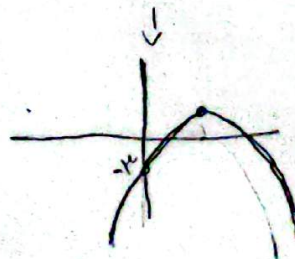
$$a < \frac{9}{4}$$

$$\text{الف) ext } \begin{cases} x = \frac{-b}{2a} = \frac{-3}{2} = -1.5 \\ y = 9 - 12 + 5 = -2 \end{cases} \Rightarrow a > 0 \rightarrow \min \cup$$



$$\text{الف) ext } \begin{cases} x = \frac{-b}{2a} = \frac{-3}{2} = -1.5 \\ y = -12 + 18 - 3 = 3 \end{cases} \Rightarrow a < 0 \rightarrow \max \cap$$

ب) $-x^2 + 3x - 3 \rightarrow a + b + c = 0 \Rightarrow x = 1$
 $\begin{matrix} 1 \\ 0 \\ 9 \end{matrix} \begin{matrix} 1 \\ 0 \\ 1 \end{matrix}$



$$x^2 - 3x - 2 = 0 \rightarrow \begin{cases} S = \frac{-b}{a} = \frac{3}{1} = 3 \\ P = \frac{c}{a} = -2 \end{cases}$$

$$\text{الف) } 9 + 4 = 13$$

$$\text{ب) } 27 + 18 = 45$$