

$$x^2 - 11x + 18 = 0 \Rightarrow (x-4)(x-7) = 0 \rightarrow x < \begin{matrix} 4 \\ 7 \end{matrix}$$

الف

$$x^2 + 3x - 11 = 0 \Rightarrow (x-4)(x+7) = 0 \rightarrow x < \begin{matrix} -7 \\ 4 \end{matrix}$$

ب

$$الف) \omega x^2 - 12x + 7 = 0 \rightarrow x^2 - 12x + 7\omega = 0 \Rightarrow (x-7)(x-\omega) = 0 \Rightarrow x < \begin{matrix} 7 \\ \omega \end{matrix}$$

$$\rightarrow x < \begin{matrix} \frac{7}{\omega} = 1.4 \\ \omega = 1 \end{matrix}$$

$$ب) \mu x^2 - 10x + 7 = 0 \rightarrow x^2 - 10x + 7\mu = 0 \Rightarrow (x-7)(x-3) = 0 \Rightarrow x < \begin{matrix} 7 \\ 3 \end{matrix}$$

$$\rightarrow x < \begin{matrix} \frac{7}{\mu} \\ \frac{3}{\mu} \end{matrix}$$

$$الف) 2x^2 - \omega x + 7 = 0 \rightarrow x^2 - \omega x + 7/2 = 0 \Rightarrow (x-7)(x-3) = 0 \rightarrow x < \begin{matrix} 7 \\ 3 \end{matrix} \rightarrow x < \begin{matrix} \frac{7}{\frac{\omega}{2}} = 1.4 \\ \frac{3}{\frac{\omega}{2}} = 1.5 \end{matrix}$$

$$ب) 2x^2 + \omega x + 7 = 0 \rightarrow x^2 + \omega x + 7/2 = 0 \Rightarrow (x+7)(x+3) = 0 \rightarrow x < \begin{matrix} -7 \\ -3 \end{matrix} \rightarrow x < \begin{matrix} -\frac{7}{\frac{\omega}{2}} = -1.4 \\ -\frac{3}{\frac{\omega}{2}} = -1.5 \end{matrix}$$

$$ج) 4x^2 - \omega x + 1 = 0 \rightarrow \Delta = 4\omega - 4(1) = 16 \rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a} \rightarrow x = \frac{\omega \pm \sqrt{16}}{4}$$

$$د) 4x^2 + 7x + 9 = 0 \rightarrow \Delta = 49 - 4(9)(4) = 49 - 144 \Rightarrow \text{دقیقاً منفی است}$$

ریشه حقیقی ندارد

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

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

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

$$S^2 - 2P = 9 - (-4) = 13$$

$$S^2 - 2SP = 9 - (-11) = 20$$

حاصل جمع ریشه ها: $-\frac{b}{a}$

حاصل ضرب ریشه ها: $\frac{c}{a}$

$$\binom{7}{\omega} + \binom{9}{\gamma} = \frac{7!}{\omega! 1!} + \frac{9!}{\gamma! 1!} = \frac{7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{\omega! \times 1 \times 1} + \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{\gamma! \times 1 \times 1} = 21 + 126 = 147$$

$$\binom{9}{\gamma} - \binom{1}{\gamma} = \frac{9!}{\gamma! 1!} - \frac{1!}{\gamma! 1!} = \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{\gamma! \times 1 \times 1} - \frac{1 \times 1 \times 1 \times 1 \times 1 \times 1 \times 1 \times 1 \times 1}{\gamma! \times 1 \times 1} = 144 - 1 = 143$$