

1.

$$\text{الف) } x^2 - 4x + 1 = 0 \Rightarrow x^2 - 4x + 4 = 1 \Rightarrow (x-2)^2 = 1 \Rightarrow x-2 = \pm 1 \Rightarrow$$

$$\begin{cases} x = 3 \\ x = 1 \end{cases} \quad \checkmark$$

$$\text{ب) } x^2 + 11x + 10 = 0 \Rightarrow x^2 + 11x + 14 = 9 \Rightarrow (x+7)^2 = 9 \Rightarrow x+7 = \pm 3 \Rightarrow$$

$$\begin{cases} x = -1 \\ x = -9 \end{cases} \quad \checkmark$$

(2)

2.

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

(2)

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

3.

$$\text{الف) } x^2 - 3x - 5 = 0 \Rightarrow \frac{3 \pm \sqrt{9 + 20}}{2} \quad \checkmark$$

(2)

$$\text{ب) } 2x^2 - 2x + \frac{1}{2} = 0 \Rightarrow \frac{1 \pm \sqrt{1 - 1}}{2} \quad \checkmark$$

4.

$$\text{الف) } x^2 - 3x + 2 = 0 \Rightarrow (x-1)(x-2) = 0 \Rightarrow \begin{cases} x = 1 \\ x = 2 \end{cases} \quad \checkmark$$

$$\text{ب) } 4x^2 + x - 3 = 0 \Rightarrow \frac{-1 \pm \sqrt{1 + 48}}{8} \Rightarrow \begin{cases} x = \frac{3}{4} \\ x = -1 \end{cases} \quad \checkmark$$

(2)

5.

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

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

(2)

۹.

$$\text{الف) } -3m^2 + 5m - 1 = 0 \Rightarrow \frac{-5 \pm \sqrt{25 - 12}}{-6} \Rightarrow \text{دو ریشه} \checkmark$$

$$\text{ب) } 2m^2 - m + 2 = 0 \Rightarrow \frac{1 \pm \sqrt{1 - 16}}{4} \Rightarrow \text{ریشه ندارد} \checkmark$$

$$\text{پ) } 2m^2 - 4m + 2 = 0 \Rightarrow \frac{4 \pm \sqrt{16 - 16}}{4} \Rightarrow \text{دو ریشه مساوی یک ریشه دارد} \checkmark$$

$$\text{ت) } 2m^2 - m + 1 = 0 \Rightarrow \frac{1 \pm \sqrt{1 - 8}}{4} \Rightarrow \text{ریشه ندارد} \checkmark$$

۷.

$$\text{الف) } \Delta > 0 \Rightarrow 9 - 4a > 0 \Rightarrow \frac{9}{4} > a \Rightarrow 2\frac{1}{4} > a \checkmark$$

$$\text{ب) } \Delta = 0 \Rightarrow 9 - 4a = 0 \Rightarrow a = \frac{9}{4} \checkmark$$

$$\text{ج) } \Delta < 0 \Rightarrow 9 - 4a < 0 \Rightarrow 9 < 4a \Rightarrow \frac{9}{4} < a \checkmark$$

$$\text{د) } \Delta > 0 \Rightarrow 2\frac{1}{4} > a \checkmark$$

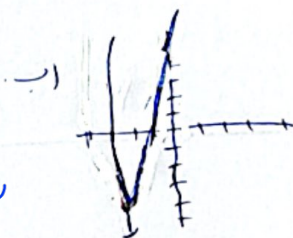
۸.

$$y = m^2 + 4m + 5$$

$$\text{الف) } \text{Min} \begin{cases} -3 \\ -4 \end{cases} \checkmark$$

$$x_{\text{ext}} = -\frac{b}{2a} = -2$$

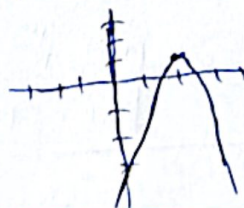
$$y_{\text{ext}} = (-2)^2 + 4(-2) + 5 = -1 \checkmark$$



$$y = -m^2 + 4m - 3$$

$$\text{الف) } \text{Max} \begin{cases} +2 \\ +1 \end{cases} \checkmark$$

راه حل؟



$$\text{ب) } -m^2 + 4m - 3 = 0$$

$$\Rightarrow (m^2 - 4m + 3) = 0 \checkmark$$

$$(m - 1)(m - 3) = 0$$

$$\begin{cases} m = +1 \\ m = +3 \end{cases}$$

$$10. m^2 - 3m - 2 = 0 \Rightarrow m = \frac{3 \pm \sqrt{17}}{2} \checkmark$$

$$\text{الف) } 9 - (-4) = 13 \checkmark$$

$$\text{ب) } 44 - (-18) = 62 \checkmark$$

$$S = \frac{b}{a} = 3$$

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

کامل ترین