

المسألة الأولى

$$y_1 = \frac{-\Delta}{\epsilon_0} = \frac{\epsilon_0 a c - b^2}{\epsilon_0} = \frac{-12 - b^2}{-4} = \frac{b^2 + 12}{4} \geq 0 \Rightarrow b^2 \geq -12 \Rightarrow b = \pm 2$$

1

$$f(x) = 2x^2 + 2x + 3 \xrightarrow{x=0} x^2 + 2x + 3 \geq 0 \Rightarrow \Delta < 0 \Rightarrow \text{جواب لا يوجد}$$

2

$$f(x) = (x-2)^2 - 1(x-2) - 1 \geq 0 \Rightarrow x^2 - 2x - 1 \geq (x-2)(x+2) \geq 0$$

$$\Rightarrow x = -2 \Rightarrow x - 2^2 = -4 \Rightarrow x^2 \geq 4 \Rightarrow x \leq -2 \text{ or } x \geq 2$$

$$\Rightarrow x = 0 \Rightarrow x - 2^2 = -4 \Rightarrow x^2 \geq -16 \Rightarrow \text{جواب لا يوجد}$$

3

$$S = \frac{-b}{a} = -\frac{-14}{4} = \frac{7}{2} \Rightarrow \alpha + \beta = \frac{7}{2} \Rightarrow \begin{cases} \alpha + \beta = \frac{7}{2} \\ \beta = \alpha + 2 \end{cases} \Rightarrow \alpha = 1, \beta = \frac{5}{2}$$

$$P = \frac{c}{a} = \frac{m}{4} = \alpha\beta = \frac{5}{2} \Rightarrow m = 10 \Rightarrow x^2 - 14x + 10 = 0 \Rightarrow \Delta > 0$$

4

$$S = \alpha + \beta = -\frac{b}{a} = -\frac{-9}{4} = \frac{9}{4} \Rightarrow \begin{cases} \alpha + \beta = \frac{9}{4} \\ \alpha - \beta = 1 \end{cases} \Rightarrow \alpha = \frac{5}{4}, \beta = \frac{1}{4}$$

$$P = \frac{c}{a} = \alpha\beta = 0 \Rightarrow \frac{m-1}{4} = 0 \Rightarrow m = 1 \Rightarrow x^2 - 9x = 0 \Rightarrow \Delta > 0$$

5

$$\alpha = \frac{1}{\beta} \quad \left\{ \begin{array}{l} \frac{1}{\beta} \times \beta = \frac{m^2 - 2}{-m} \Rightarrow m^2 - 2 = -m \Rightarrow m^2 + m - 2 = 0 \Rightarrow m = 1 \text{ or } m = -2 \end{array} \right.$$

$$m = 1 \Rightarrow -x^2 + 5x - 1 = 0 \Rightarrow \Delta > 0 \checkmark$$

$$m = -2 \Rightarrow x^2 + 5x + 2 = 0 \Rightarrow \Delta > 0 \checkmark \Rightarrow \boxed{m = 1}$$

6

$$P = \frac{c}{a} = \frac{m}{4} \Rightarrow \alpha\beta = \frac{m}{4} \Rightarrow \frac{1}{\beta} \times \beta = \frac{m}{4} \Rightarrow \alpha = \frac{m}{4}$$

$$S = \frac{-b}{a} = m \Rightarrow \alpha + \beta = \frac{m}{4} + \frac{4}{m} = \frac{m^2 + 16}{4m} \geq m \Rightarrow x^2 - \frac{m^2}{4}x + 4 = 0 \checkmark$$

$$\alpha = \beta \left\{ \begin{array}{l} \Rightarrow \alpha\beta = 5 \Rightarrow \beta = 1 \\ \alpha = \beta \end{array} \right\} \Rightarrow \alpha = 1$$

$$p = m = \alpha\beta \left\{ \begin{array}{l} \Rightarrow m = 1 \rightarrow 2^2 - 5x + 1 \rightarrow 0 \\ \alpha\beta = 1 \end{array} \right.$$

$$p = \frac{c}{a} = 1 \Rightarrow \beta = \frac{1}{\alpha} \Rightarrow \beta = 1$$

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

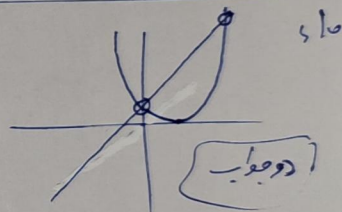
$$p = \frac{c}{a} = 1$$

$$\alpha^2 + \frac{1}{\alpha^2} = \alpha^2 + \beta^2 = 5^2 - 2ps = 25 - 2(1)(1) = 22$$

$$h(t) = -10t^2 + 20t = -10(t^2 - 2t) = -10(t(t-2)) \Rightarrow -10t(t-2) = 0$$

$$g_2 = \frac{-\Delta}{2a} = \frac{0 - 2 \cdot 20}{-20} \Rightarrow g_2 = \frac{40}{20} = 2$$

$$cu) (2-1)^2 = 2x+1 \Rightarrow 2^2 - 2x + 1 = 2x+1 \Rightarrow 2^2 - 4x = 0 \Rightarrow 2=0$$



$$1) 2^2 + 2x = 2x+1 \Rightarrow 2^2 - 2x = 1 \Rightarrow 2^2 - 4x = 0 \Rightarrow 2=0$$

$$\left. \begin{array}{l} 2 \geq 1 \Rightarrow 2^2 + 2x = 2x+1 \Rightarrow 2^2 - 2x = 1 \Rightarrow 2^2 - 4x = 0 \Rightarrow 2=0 \\ 2 \leq 1 \Rightarrow 2^2 + 2x = 2x+1 \Rightarrow 2^2 - 2x = 1 \Rightarrow 2^2 - 4x = 0 \Rightarrow 2=0 \end{array} \right\} \Rightarrow x = -1$$

$$\Rightarrow x = 1$$

$$x = -1$$

