

$$\frac{-b}{2a} = 2 \Rightarrow \frac{-1}{2a-2} = 2 \Rightarrow 2a-2 = -1 \Rightarrow 2a = 1 \Rightarrow a = \frac{1}{2}$$

-1

$$\hookrightarrow -\frac{1}{2}x^2 + x - 2 = 0 \xrightarrow{\times (-2)} x^2 - 2x - 4 = 0 \rightarrow (x-4)(x+2) \rightarrow \begin{cases} x=4 \checkmark \\ x=-2 \times \end{cases}$$

$$\textcircled{1} m < 0 \text{ و } \textcircled{2} \Delta > 0 \Rightarrow 2a - 4m^2 > 0 \rightarrow 4m^2 < 2a \Rightarrow m < \frac{\sqrt{a}}{2} \rightarrow (-\frac{\sqrt{a}}{2}, \frac{\sqrt{a}}{2})$$

$$\textcircled{3} \Delta = 0 \Rightarrow -\frac{a}{2} < m < \frac{a}{2} \Rightarrow m \in (-\frac{a}{2}, \frac{a}{2})$$

5

$$x^2 - 5x + p = 0 \Rightarrow S = \frac{5 - \sqrt{5} + 5 + \sqrt{5}}{2} = 5$$

-3

$$p = \frac{(5 - \sqrt{5})(5 + \sqrt{5})}{2 \times 2} = \frac{9 - 5}{2} = \frac{4}{2} = 2$$

$$\hookrightarrow x^2 - 5x + \frac{4}{2} = 0 \xrightarrow{\times 2} 2x^2 - 10x + 4 = 0$$

10

$$S = \frac{-b}{a} = 5 \Rightarrow \alpha + \beta = 5 \text{ و } \beta = 5 - \alpha \Rightarrow 3\alpha^2 + (5 - \alpha)^2 = 14$$

-14

$$\hookrightarrow 4\alpha^2 - 10\alpha + 5 = 0 \xrightarrow{\div 1} \alpha^2 - 2.5\alpha + 1.25 = 0 \rightarrow (\alpha - 1)^2 = 0 \Rightarrow \alpha = 1$$

$$\beta = 4$$

1/2

$$p = \frac{m+1}{2} = 1 \times 2 \Rightarrow m+1 = 2 \Rightarrow m = 1$$

15

$$A|_0 \in \mathbb{R} \Rightarrow y = a(x-2)^2 + 9 \xrightarrow{10} 0 = 4a + 9 \Rightarrow a = -\frac{9}{4}$$

-15

$$\hookrightarrow y = -\frac{9}{4}(x^2 - 4x + 4) + 9 \Rightarrow y = -\frac{9}{4}x^2 + 9x - 9 + 9 \Rightarrow y = -\frac{9}{4}x^2 + 9x$$

$$\Rightarrow -(x-4)(x+1) = 0 \Rightarrow \begin{matrix} x=4 \\ x=-1 \end{matrix} \Rightarrow \frac{-1}{-4+1} = \frac{4}{-3} \xrightarrow{\text{نقطه } y} (-1, 4)$$

20

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{5}{p}$$

-9

$$\alpha = 3, 3 + \beta = \frac{5}{p} \Rightarrow \beta = \frac{5}{p} - 3 < 0 \Rightarrow \text{غير صحيح}$$

$$S = \frac{-b}{a} = \frac{5}{\alpha} \xrightarrow{\textcircled{1}} \begin{cases} \alpha = -3, -3 + \beta = \frac{5}{p} \Rightarrow \beta = \frac{5}{p} + 3 = \frac{p}{3} \end{cases}$$

$$p = \frac{c}{a} = \frac{9\beta}{\alpha} = \alpha\beta \Rightarrow \alpha^2 = 9 \Rightarrow \alpha = \pm 3 \xrightarrow{\textcircled{1}} \alpha = -3 \checkmark$$

25

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{1}{3} + \frac{p}{3} = \frac{-3+9}{3} = \frac{6}{3} = 2$$

$$S = -m, p = -\gamma m / \alpha = \beta \rightarrow \beta^2 + m\beta - \gamma m = 0 \Rightarrow m\beta = \gamma m - \beta^2 \quad -V$$

$$\hookrightarrow \alpha^2 - \gamma m + \beta^2 = \Lambda \rightarrow S^2 - \gamma p - \gamma m = \Lambda = 0 \rightarrow S^2 - \gamma p = \gamma m + \Lambda$$

$$m^2 + \gamma m = \gamma m + \Lambda \rightarrow m^2 + \gamma m - \Lambda = 0 \rightarrow m = -\gamma \rightarrow \Delta = 14 \rightarrow X$$

$$m = \gamma \rightarrow \Delta = 2 \rightarrow \checkmark$$

$$\hookrightarrow m = \gamma \Rightarrow S = -\gamma$$

$$y_{\max} = \frac{-\Delta}{\gamma a} = \Lambda \rightarrow \frac{\gamma m^2 + \gamma \Lambda m - 14}{\gamma m} = \Lambda \rightarrow \gamma m^2 - \gamma m - 14 = 0 \quad -\Lambda$$

$$\hookrightarrow m^2 - \gamma m - \Lambda = 0 \rightarrow m = \gamma \rightarrow \Delta = 14 - f(2)(9) < 0 \quad X$$

$$\hookrightarrow m = -\gamma \rightarrow y = -\gamma x^2 + \gamma x + 4 \rightarrow x^2 - \gamma x - \gamma = 0 \rightarrow x = -1, x = \gamma$$

$$S \mid \gamma \Rightarrow y = a(x - \gamma)^2 + 4 \xrightarrow{\text{إيجاد}} 4 = \gamma a + 4 \rightarrow a = -\frac{1}{\gamma} \quad -9$$

$$y = -\frac{1}{\gamma} (x^2 + \gamma - \gamma x) + 4 = -\frac{x^2}{\gamma} + x + \frac{\gamma}{\gamma} \Rightarrow S = \gamma$$

$$p = -\Lambda$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{S}{p} = \frac{\gamma}{-\Lambda} = -\frac{1}{\gamma}$$

$$15 \quad \alpha = \gamma \rightarrow \gamma - \Lambda a = \Lambda + \gamma a^2 + \gamma a + \gamma = 0 \Rightarrow \gamma a^2 + \gamma a - 1 = 0 \quad -1$$

$$a^2 - \gamma a - \gamma = 0 \rightarrow a = 1, a = -\frac{1}{\gamma}$$

$$\hookrightarrow a = 1 \Rightarrow x^2 = (\gamma + \gamma)x + (\gamma + \gamma + \gamma) = x^2 - \Lambda x + 1\gamma = 0 \Rightarrow x = \gamma, x = \gamma$$

$$\hookrightarrow a = -\frac{1}{\gamma} \Rightarrow x^2 = \left(-\frac{\gamma}{\gamma} + \gamma\right)x + \left(+\frac{\gamma}{\gamma} - \gamma + \gamma\right) = 0 = x^2 - \frac{\Lambda}{\gamma}x + \frac{\gamma}{\gamma} = 0$$

$$20 \Rightarrow \gamma x^2 - \Lambda x + \gamma = 0 \rightarrow x^2 - \Lambda x + 1\gamma = 0 \Rightarrow x = \gamma, x = \frac{\gamma}{\gamma}$$