

$y = 2x^2 - 4x + 1$ $(-\frac{b}{2a}, -\frac{c}{a})$ $(\frac{E}{F} = 1 \text{ و } \frac{-A}{\Lambda} = -1)$ $(1, -1)$ ✓
 $a > 0$ min

$y = -2x^2 + 2x - 1$ $-\frac{b}{-F} = \frac{b}{F}$ $-\frac{A}{Fu} = \frac{21}{-1}$
 $a < 0$
 max
 $(\frac{21}{F}, -\frac{21}{\Lambda})$ ✓

$y = x^2 - 6x + 1$ $x = \frac{6 \pm \sqrt{36}}{2} = \frac{6 \pm 6}{2} = 3 \pm 3$
 $c=1$
 رأس = $(3, -1)$ ✓
 $a > 0$ $s > 0$ $p > 0$

$y = -x^2 + 4x + 1$ $x = \frac{-4 \pm \sqrt{16}}{-2} = \frac{-4 \pm 4}{-2} = 2 \pm 2$
 $c=1$
 رأس = $(2, 5)$ ✓
 $a < 0$ $s > 0$ $p < 0$

$s = 1$ $x^2 - 5x + p = x^2 - x - 2$ $Ex^2 + kx^2 - 9x - 2 \sim x^2 - x - 2$
 $p = -2$ $-Ex + 5x^2 + \Lambda x$ $Ex + (k+E)$

$(k+E)x^2 - x - 2$
 $-(k+E)x^2 + (k+E)x + k + \Lambda$
 $(k+2)x + (2k-2) = 0$
 $k = -2$ ✓

$\sqrt{x} - \sqrt{y} = 1$ $x^2 - 4mx + m$ $2x^2 - x - 1 = 0$
 $x + y - 2\sqrt{xy} = 1$ $P = \frac{c}{a} = \frac{-1}{2}$ ✓
 $s - 2\sqrt{p} = 1$

$2m - 2\sqrt{m} = 1$
 $\sqrt{m} = t$ $t = 1$ $\sqrt{m} = \frac{1}{2} \Rightarrow m = \frac{1}{4}$
 $2t^2 - 2t - 1 = 0$ $t = \frac{1}{2}$ $\sqrt{m} = 1 \Rightarrow m = 1$ ✓

$\frac{c \times \sqrt{a}}{\sqrt{|a|}} = \frac{c}{F} \Rightarrow \frac{m \times (m-2)}{2} = \frac{c}{F}$

$\Delta = m^2 + 4m + 4 - 4m$
 $\Delta = (m-2)^2$
 $\frac{m^2 - 2m}{2} = \frac{c}{F}$

$m^2 - 2m = 2$
 $m^2 - 2m - 2 = 0$
 $(m-2)(m+1)$
 $m = 2$
 $m = -1$

$m = 2$ $y = x^2 - 2x + 1$
 $m = -1$ $y = x^2 + 2x + 1$

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

$$y = ax^2 + 2x + a$$

$$a > 0$$

$$\frac{-\Delta}{2a} = \frac{V}{\Lambda} \quad \frac{-(9-4a^2)}{2a} = \frac{V}{\Lambda} \Rightarrow 2\Lambda a = 2Va^2 - V^2$$

$$2Va^2 - 2\Lambda a - V^2 = 0 \quad \Delta = 4Va$$

$$\Lambda a^2 - Va - 11$$

$$a = \frac{V \pm \sqrt{\Delta}}{2V} \Rightarrow a = \frac{V \pm \sqrt{4Va}}{2V} \Rightarrow a = \frac{V \pm 2\sqrt{Va}}{2V}$$

$$\Rightarrow a < 0 \quad \text{or} \quad a > 0$$

بمقدار ✓

2
6

$$\frac{\sqrt{\Delta}}{|a|} = \gamma \quad \Delta = a^2 + 1 + 2a - 4a = a^2 - 2a + 1 = (a-1)^2 \quad \rho > 0$$

$$\sqrt{(a-1)^2} = \gamma \Rightarrow a-1 = \pm \gamma$$

$$a = 1 + \gamma$$

$$a = 1 - \gamma$$

$$x^2 - \epsilon x + \gamma$$

$$x^2 - 10x + b = 0$$

$$x^2 - 10x + 25$$

$$25 - 25 = 0 \quad \checkmark$$

$$\frac{\sqrt{a}}{|a|} = \gamma \Rightarrow \sqrt{100 - \epsilon b} = \gamma$$

$$100 - \epsilon b = \gamma^2 \Rightarrow b = 25$$

2
7

$$y = ax^2 + a^2x + \gamma$$

$$\text{سواء } \left(\frac{-a}{-2a} = \frac{1}{2}, \frac{a}{a} + \gamma \right)$$

$$y = 2bx^2 - bx + 1$$

$$\text{سواء } \left(\frac{b}{2b} = \frac{1}{2}, -\frac{b}{2b} - 1 \right)$$

$$2b\left(\frac{1}{2}\right)^2 - \frac{1}{2}b - 1 = \frac{a}{a} + \gamma \Rightarrow \frac{a}{a} + \gamma = -1 \Rightarrow \frac{a}{a} = -2$$

$$12x^2 - 12x + 2$$

$$12\left(\frac{1}{2}\right)^2 - 2 + 2 = \frac{-b}{1} \cdot 1$$

$$\frac{12}{4} - 1 = \frac{-b}{1} \cdot 1$$

$$\frac{5}{1} = \frac{12}{4} = \frac{-b}{1} \quad -b = 9 \quad b = -9 \quad \checkmark$$

2
8

$$y = \omega a x^2 + \epsilon x + \beta$$

$$a \times \beta = \frac{c}{a} = \frac{B}{\omega a}$$

$$a = \frac{1}{\omega a} \Rightarrow a^2 = \frac{1}{\omega} \Rightarrow a = \pm \frac{1}{\omega}$$

$$a = \frac{1}{\omega} \quad \text{or} \quad \frac{1}{-\omega}$$

$$y = \omega x^2 + \epsilon x + \beta$$

$$S = -\frac{\epsilon}{\omega} = a + \beta = \frac{1}{\omega} + \beta = -\frac{\epsilon}{\omega} = \beta = -1 \quad \beta < a$$

$$a = -\frac{1}{\omega}$$

$$y = -\omega x^2 + \epsilon x + \beta$$

$$S = \frac{\epsilon}{\omega} = a + \beta = -\frac{1}{\omega} + \beta = \frac{\epsilon}{\omega} \Rightarrow \beta = 1 \quad \checkmark$$

$$y = -\omega x^2 + \epsilon x + 1$$

$$\text{سواء } \left(\frac{-b}{2a} = \frac{\epsilon}{2\omega}, \frac{1}{\omega} \right)$$

بمقدار ✓

2
9

$$x^2 - (a^2 + b^2 - 1)x + a + b - 1 = 0$$

$$P = ab = a + b - 1$$

$$ab - a - b + 1 = 0$$

$$a + b = 1 + \epsilon = \omega \quad \checkmark$$

$$S = a + b = a^2 + b^2 - 1x$$

$$(a-1)(b-1) = 0$$

$$1 + b = 1 + b^2 - 1x$$

$$b^2 - b - 1x = 0$$

$$(b-1)(b+1) = 0$$

$$b = -3x \quad \text{or} \quad b = 1$$

$$b = 1 \quad \checkmark$$

2
10