

$$\left. \begin{aligned} \frac{1}{\alpha} + \frac{1}{\beta} &= \frac{\beta + \alpha}{\alpha\beta} = \frac{S}{P} \\ S &= \frac{V}{\alpha} \\ P &= \frac{9\beta}{\alpha} \end{aligned} \right\} \frac{1}{\alpha} + \frac{1}{\beta} = \frac{S}{P} = \frac{\frac{V}{\alpha}}{\frac{9\beta}{\alpha}} = \frac{V}{9} \frac{1}{\beta}$$

$$\Rightarrow \frac{1}{\alpha} = \frac{-V}{9} \frac{1}{\beta} \Rightarrow \beta = -\frac{V}{9}\alpha$$

$$\Rightarrow P = \frac{9\beta}{\alpha} = 9\beta \left(-\frac{V}{9}\right) \left(\frac{1}{\beta}\right) = -V \quad \frac{S}{P} = \frac{\frac{V}{\alpha}}{-V} = \boxed{\frac{V}{\alpha}} \checkmark$$

$$S = \alpha + \beta = \alpha - \frac{V\alpha}{9} = \frac{V}{9} \Rightarrow \frac{V\alpha}{9} = \frac{V}{\alpha} \Rightarrow \alpha^2 = 9 \Rightarrow \alpha = \pm 3 \Rightarrow \beta = -\frac{V}{9}\alpha \Rightarrow \alpha = -3 \Rightarrow S = \frac{V}{-3}$$

$$\alpha^2 - m\beta = \gamma m - m\alpha - m\beta = \lambda \Rightarrow \gamma m - mS = \lambda$$

$$S = -m \Rightarrow m^2 + \gamma m - \lambda = 0 \Rightarrow (m+5)(m-2) = 0 \Rightarrow m = -5, 2$$

$$\text{اگر } m = -5 \Rightarrow x^2 - 5x + \lambda = 0 \quad \Delta < 0$$

$$\Rightarrow m = 2 \Rightarrow S = -m = \boxed{-2} \checkmark$$

$$f(x) = mx^2 + fx + \frac{m}{\gamma} + V \quad \Delta = 14 - f(m) \left(\frac{m}{\gamma} + V \right) = 14 - 2m^2 - 2\lambda m$$

$$\max_f = \frac{-\Delta}{f\alpha} = \frac{2m^2 + 2\lambda m - 14}{f\alpha} = 1 \Rightarrow 2m^2 - fm - 14 = 0 \Rightarrow m^2 - \gamma m - \lambda = 0$$

$$(m-5)(m+2) = 0 \Rightarrow m = 5, -2 \Rightarrow \boxed{m = -2}$$

$$f(x) = -2x^2 + fx + 4 = -2(x^2 - \gamma x - 2) = -2(x-3)(x+1) \Rightarrow \boxed{K = 3} \checkmark$$

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$$f(x) = k(x-2)^2 + 4 \Rightarrow fk + 4 = f \Rightarrow k = \frac{f}{\gamma}$$

$$f(0) = f$$

$$f(x) = \frac{1}{\gamma}(\alpha^2 - 2\alpha + 2) + 4 = \frac{1}{\gamma}\alpha^2 + 2\alpha + f \quad S = f \quad P = -1$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{f}{-1} = \boxed{-\frac{1}{\gamma}} \checkmark$$

$$\alpha = 2 \Rightarrow f - 4(f+2) + 2\alpha^2 + 4\alpha + 2 = 0 \Rightarrow f - 1 + 2 + 2 = 0$$

$$\alpha + 1 = t$$

$$t = \frac{1 \pm \sqrt{4f - f^2}}{4} = \frac{1 \pm f}{4} = 2, \frac{1}{4}$$

$$f(x) = x^2 - 1x + 11 \Rightarrow \frac{c}{a} = 11 \Rightarrow \boxed{x_1 = 4} \checkmark$$

$$x^2 - \frac{1}{4}x + \frac{f}{4} \Rightarrow \frac{c}{a} = \frac{f}{4} \Rightarrow \boxed{x_2 = \frac{f}{4}}$$