

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

$$\Rightarrow \Delta = 1 - 4 \times (-\frac{1}{2}) \times 2 = 1 \Rightarrow \frac{-1 \pm \sqrt{1}}{2 \times \frac{1}{2}} = \frac{-1 \pm 1}{1} \Rightarrow \frac{-1+1}{1} = 0 \Rightarrow \frac{-1-1}{1} = -2 \Rightarrow \checkmark$$

$$m > 0 \quad \Delta > 0 \Rightarrow 2\Delta - 2m^2 \geq 0 \Rightarrow m = -2, 2$$

$$m \in (-2, 2) \Rightarrow m \in (0, 2)$$

$$x^2 - 5x + 6 \Rightarrow (x^2 - 2x + \frac{4}{9})x^2 = x^2 - 2x + \frac{4}{9}$$

$$x^2 \Rightarrow 9x^2 - 18x + 4$$

$$\alpha^2 + \beta^2 = 12 - 2^2$$

$$\hookrightarrow f\alpha - \frac{m+2}{2} \hookrightarrow f\beta - \frac{m+2}{2} \Rightarrow f\alpha + f\beta + m - 2 = 12 - 2^2$$

$$\Rightarrow 12 - m - 2 = 12 - 2^2 \Rightarrow 2^2 - 2 + m = 0 \Rightarrow 2^2 = \frac{2-m}{2}$$

$$f - \frac{2-m}{2} = \frac{m+2}{2} = \beta^2 \quad 2^2 \beta^2 = \frac{-m^2 - 2m + 12}{2} = \frac{(m+2)^2}{2} \Rightarrow m = -2$$

$$y_{ext} > 0 \Rightarrow \max \Rightarrow y = \frac{-(m-2)^2 + 9}{4} \times a$$

$$\Rightarrow y = \frac{(-m^2 + 4m + 4)}{4} \times a \quad c = d \Rightarrow a = 1 \Rightarrow$$

$$m = \frac{-4 \pm \sqrt{16}}{-2} = -1 \Rightarrow -1 \pm 2$$

$$\Rightarrow \text{if } a \in (-1, 2) \Rightarrow y > 0$$

$$\frac{V}{\alpha} = \alpha + \beta, \quad \frac{q\beta}{\alpha} = \frac{\alpha}{1} \Rightarrow \alpha^2\beta - q\beta = 0$$

$$\alpha^2 + \alpha\beta - V = 0 \quad \Rightarrow \beta(\alpha^2 - q) = 0$$

$$\alpha = \sqrt{q} \Rightarrow q + \sqrt{q}\beta - V = 0 \Rightarrow \beta = \frac{V - \sqrt{q}}{\sqrt{q}}$$

$$\alpha = -\sqrt{q} \Rightarrow q - \sqrt{q}\beta - V = 0 \Rightarrow \beta = \frac{q - V}{\sqrt{q}}$$

$$\Rightarrow \frac{1}{\alpha} + \frac{1}{\beta} = \frac{-1}{\sqrt{q}} + \frac{\sqrt{q}}{V} = \frac{V}{q}$$

$$x = \frac{-m \pm \sqrt{m^2 + \epsilon m}}{r} \Rightarrow \frac{m^2 + m^2 + \epsilon m - \sqrt{m^2 + \epsilon m}}{r} = \frac{-m^2 - m\sqrt{m^2 + \epsilon m}}{r}$$

$$= \frac{\Delta m}{\epsilon} = \epsilon m = 1 \Rightarrow m = 5$$

$$\Rightarrow \frac{-b}{a} = \frac{-r}{1} = -r = \alpha + \beta$$

$$\frac{14 - 4m^2 - 4m}{-4m} = 1 \Rightarrow 4m^2 - 4m - 14 = 0$$

$$m = -1 \Rightarrow 14 - 4 + 4 = 14 > 0 \quad \checkmark$$

$$m = 0 \Rightarrow 14 - 0 - 14 = 0 \quad \checkmark$$

$$\Rightarrow m = -1 \Rightarrow -m^2 + \epsilon m + \frac{1}{r} = 0 \Rightarrow \Delta = 14 + 14 = 28 \Rightarrow \frac{14 \pm \sqrt{28}}{-1} = \frac{14 \pm 2\sqrt{7}}{-1} = \frac{14 \pm 2\sqrt{7}}{-1}$$

$$\frac{-\Delta}{\epsilon a} = 1 \quad \frac{-b}{\epsilon a} = \sqrt{3} \quad c = r$$

$$\Rightarrow b = -\epsilon a \Rightarrow \Delta = 14a^2 - 14a \Rightarrow \frac{-\Delta}{\epsilon a} = \frac{14a - 14}{\epsilon a} = \frac{14(a-1)}{\epsilon a}$$

$$\frac{14(a-1)}{\epsilon a} = \sqrt{3} \Rightarrow a = \frac{1}{1 \pm \sqrt{3}}$$

$$\Rightarrow \alpha, \beta = \frac{-1 \pm \sqrt{14}}{-2} = \frac{1 \pm \sqrt{14}}{2} \Rightarrow \frac{1}{1 \pm \sqrt{14}} + \frac{1}{1 \mp \sqrt{14}} = \frac{-1}{r}$$

$$f - 14a - 14 + 4a^2 + 4a + 14 = 4a^2 - 14a - 1 = 0$$

$$\Rightarrow \Delta = 14^2 + 4 = 196 + 4 = 200 \Rightarrow a = \frac{14 \pm \sqrt{200}}{4} = \frac{14 \pm 10\sqrt{2}}{4} = \frac{7 \pm 5\sqrt{2}}{2}$$

$$x^2 - 14x + 14 = 0 \quad (x-7)(x-4) = 0 \Rightarrow x = 7 \text{ or } x = 4$$

$$x^2 - 14x + 14 = 0 \Rightarrow x = \frac{14 \pm \sqrt{196 - 4 \cdot 14}}{2} = \frac{14 \pm \sqrt{200}}{2} = \frac{14 \pm 10\sqrt{2}}{2} = 7 \pm 5\sqrt{2}$$