

$$x_5 = 2$$

15, 25

$$\frac{-1}{r(a-1)} = 2 \rightarrow a = \frac{r}{r}$$

$$y=0 = -\frac{x^r}{r} + 1 + \frac{r}{r} \rightarrow x = \frac{-1 \pm \sqrt{1+r}}{-\frac{1}{r}} \rightarrow \begin{cases} x=2 \\ x=-2 \end{cases}$$

(2)



$$m < 0$$

$$\Delta > 0 \rightarrow r\omega - r^2 m^2 > 0 \rightarrow m^2 < \frac{r\omega}{r^2} \rightarrow -\frac{\sqrt{\omega}}{r} < m < \frac{\sqrt{\omega}}{r}$$

$$S = \frac{\omega}{m} < 0$$

$$\rightarrow (-\frac{\sqrt{\omega}}{r}, 0)$$

(2)

$$S = \frac{r - \sqrt{\Delta} + r + \sqrt{\Delta}}{r} = 2$$

$$P = \frac{(r - \sqrt{\Delta})(r + \sqrt{\Delta})}{9} = \frac{r}{9}$$

$$y = ax^2 + bx + c = x^2 - 2x + \frac{r}{9} = 9x^2 - 18x + r$$

(2)

$$\Delta > 0 \rightarrow 9r - 18(m+r) > 0 \rightarrow 11m + r > 0 \rightarrow m < 4$$

$$\alpha + \beta = r \quad \alpha\beta = \frac{m+r}{r}$$

$$\alpha^r + \beta^r + \frac{r\alpha\beta}{m+r} = 14$$

$$\alpha = \frac{11 - \sqrt{9r - 18m - 14}}{r} = r - \frac{\sqrt{r^2 - 2rm}}{r} = r - \sqrt{\frac{r}{m}}$$

$$r\alpha^r = (r + r - r\sqrt{\frac{r}{m}} - r\sqrt{\frac{r}{m}})^r \alpha^r = 14^r - 18m - 18\sqrt{\frac{r}{m}} = 14^r \rightarrow \frac{14 - 9m}{r} = \sqrt{\frac{r}{m}} = r - \frac{9}{r}m$$

$$y = a(x-r)^2 + 9 \rightarrow y = -x^2 + 9x + 9 \rightarrow \begin{cases} x=1 \\ x=9 \end{cases}$$

$$ra + 9 = 0 \rightarrow a = -1$$

$$\rightarrow (-1, 9)$$

(2)

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} \rightarrow \alpha = -3 \rightarrow \beta = 3 - \frac{1}{-3} = \frac{10}{3} \checkmark$$

$$\alpha + \beta = \frac{1}{\alpha} \rightarrow \alpha = 3 \rightarrow 3 + \beta = \frac{1}{3} \rightarrow \beta = -\frac{8}{3} \text{ و } \alpha\beta = 9 \rightarrow \alpha^2 = 9 \rightarrow \alpha = \pm 3$$

$$\rightarrow \alpha = -3, \beta = \frac{10}{3} \rightarrow \frac{\alpha + \beta}{\alpha\beta} = \frac{-\frac{10}{3}}{-\frac{10}{3}} = \boxed{\frac{1}{4}} \checkmark$$

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$$\alpha + \beta = -m \quad \alpha\beta = -m \quad \alpha^2 = 4m - \alpha m$$

$$4m - m\alpha + m\beta = 1 \rightarrow 4m - m(-m) = 1$$

$$\rightarrow m^2 + 4m - 1 = 0 \rightarrow (m-2)(m+6) = 0 \rightarrow \begin{cases} m=2 \text{ و } \alpha\beta = -2 \\ m=-6 \text{ و } \alpha\beta = 6 \end{cases}$$

$$\frac{m=2}{m=-6} \rightarrow \frac{\alpha+\beta=-2}{\alpha+\beta=6} \rightarrow \alpha\beta=1$$

$$\Delta > 0 \rightarrow m^2 + 4m > 0$$

$$\frac{-1}{2} \quad \frac{0}{2}$$

(2) 4

$$\rightarrow \alpha + \beta = -(2) = \boxed{-2} \checkmark$$

$$y_s = \frac{-\Delta}{r_a} = 1 \rightarrow \frac{-(19 - 4m(\frac{1}{2} + \frac{m}{4}))}{4m} = 1 \rightarrow \frac{-19 + 2m + 4m^2}{4m} - 1 = 0 \checkmark \rightarrow \begin{cases} m=4 \times \\ m=-2 \checkmark \end{cases}$$

$$\frac{4m^2 + 2m - 19}{4m} = 1 \rightarrow 4m^2 + 2m - 19 = 4m \rightarrow 4m^2 - 2m - 19 = 0$$

$$\Delta = 4 + 304 = 308 \rightarrow m = \frac{2 \pm \sqrt{308}}{8}$$

$$S = \frac{b}{r_a} > 0 \rightarrow \frac{-r}{4m} > 0 \rightarrow \frac{r}{4m} < 0 \rightarrow m < 0$$

$$P = \frac{c}{a} < 0 \rightarrow \frac{1}{m} < 0 \rightarrow m < 0$$

$$f(m) = -4m^2 + 4m + 4 = 0 \rightarrow \begin{cases} m=1 \\ m=2 \end{cases} \checkmark$$

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$$\frac{1}{\alpha} + \frac{1}{\beta} = ?$$

$$y = a(x-2)^2 + 4 \rightarrow y = \frac{x^2}{4} + 2x + 4 \rightarrow \begin{cases} S = \alpha + \beta = \frac{1}{-2} = -\frac{1}{2} \\ P = \alpha\beta = \frac{4}{-1} = -4 \end{cases}$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{-\frac{1}{2}}{-4} = \boxed{\frac{1}{8}} \checkmark$$

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$$r_1(r_1 + 1)r_1 + r_1^2 + 4r_1 + 3 = 0$$

$$r_1^3 + 2r_1^2 + 4r_1 + 3 = 0 \rightarrow \begin{cases} a=1 \\ a=-\frac{1}{2} \end{cases} \checkmark$$

$$S = \alpha + \beta = \frac{r_1 + r_2}{r_1 r_2} = \frac{r_1 + r_2}{r_1^2} \rightarrow \begin{cases} a=1 \rightarrow (1) \text{ و } P=1 \neq 1 \text{ و } \alpha\beta \neq 1 \\ a=-\frac{1}{2} \rightarrow (2) \text{ و } P=\frac{1}{4} \neq \frac{1}{4} \text{ و } \alpha\beta \neq \frac{1}{4} \end{cases}$$

بنا جفت

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$$a=1 \rightarrow x^2 - 1x + 1 = 0 \rightarrow \begin{cases} x=1 \\ x=1 \end{cases}$$

$$a=-\frac{1}{2} \rightarrow 2x^2 - 1x + 1 = 0 \rightarrow \begin{cases} x=2 \\ x=\frac{1}{2} \end{cases}$$

$$r\alpha^r + \alpha^r + r\beta^r - \beta^r = 1r \rightarrow r(\alpha^r + \beta^r) + \alpha^r - \beta^r = 1r$$

1K

$$\frac{\beta > \alpha}{\alpha - \beta < 0} \rightarrow r(S^r - r\rho) + (S)\left(\frac{-\sqrt{\Delta}}{|a|}\right) = 1r$$

$$\frac{S = r}{\rho = \frac{m+r}{r}} \rightarrow r(14 - m - r) - r\left(\frac{\sqrt{r\Lambda - \Lambda m}}{r}\right) = r\Lambda - rm - \sqrt{r\Lambda - \Lambda m} = 1r$$

$$14 - rm = \sqrt{r\Lambda - \Lambda m} \rightarrow \boxed{m = r}$$