

$$x^r - \omega x + r = 0 \quad \beta^r = \omega \beta - r$$

$$\Rightarrow \alpha + \beta = \omega$$

$$\Rightarrow \alpha \beta = r \Rightarrow \alpha = \frac{r}{\beta}$$

$$\frac{r\alpha + \beta^{\omega}}{\omega \beta^r} = \frac{\frac{r}{\beta} + \beta^{\omega}}{\omega \beta^r} = \frac{1 + \beta^{\omega}}{\omega \beta^{\omega}} = \frac{1 + 21\omega \beta - 9\omega^2}{\omega(23\beta - 1)} = \frac{21\omega \beta - 9\omega^2}{11\omega \beta - \omega^2} = \frac{43\beta - 19}{23\beta - 1} = 19$$

$$y = ax^r + bx + c$$

$$x_{ext} = \frac{(r - 1/\omega)}{r} = 1/\omega \quad \frac{-b}{ra} = 1/\omega \Rightarrow \frac{-b}{a} = 1/\omega$$

$$\text{اختلاف در علامت} = \frac{-b + \sqrt{\Delta} + b + \sqrt{\Delta}}{ra} = \frac{2\sqrt{\Delta}}{ra} = \frac{\sqrt{\Delta}}{|a|}$$

$$x^r + rkx + \omega = 0 \rightarrow \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{rk^2 - r}}{1} = \frac{r}{r} k \Rightarrow rk^2 - r = \frac{1}{9} k^2 \Rightarrow rk^2 - \frac{1}{9} k^2 - r = 0$$

$$\Rightarrow k = 3$$

$$\left[\frac{k^r}{r} \right] = \left[\frac{9}{3} \right] = 3$$

$$y_{ext} = 1$$

$$x_{ext} = \frac{(\omega + r)}{r} = -1$$

$$y = ax^r + bx + c$$

$$y = \omega a + ra + c$$

$$y = 9a + rb + c$$

$$y = 2\omega a - \omega b + c$$

$$1 = -rc + rc + c \Rightarrow rc = 1 \Rightarrow c = \frac{1}{r}$$

$$-x^r + \omega x + m = f(x)$$

$$\Delta > 0 \Rightarrow r\omega + 4m > 0 \Rightarrow 4m > -r\omega \Rightarrow m > \frac{-r\omega}{4} \Rightarrow m > -\frac{r}{4\omega}$$

$$f(\frac{r}{\omega}) > 0 \Rightarrow r \cdot \frac{r}{\omega} + \omega \cdot \frac{r}{\omega} + m = \frac{r^2}{\omega} + r + m > 0 \Rightarrow m > -\frac{r^2}{\omega} - r$$

$$y = mx^r - 1rx + \omega m - 1$$

$$y = \frac{-\Delta}{\epsilon a} = \frac{-1rx + r \cdot m^r - \epsilon m}{\epsilon m} \Rightarrow r \cdot m^r - \epsilon m - 1rx = \Delta m \Rightarrow r \cdot m^r - 1rx - 1rx = 0$$

$$y = rx^r - 1rx + 1/r \Rightarrow x_{ext} = \frac{+1/r}{r} = \boxed{r} \checkmark$$

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$$x^r + r(a+1)x + ra - 1 = 0$$

$$\left. \begin{array}{ccc} \alpha & \alpha, \beta & \\ \downarrow & \downarrow & \downarrow \\ T_1 & T_r & T_r \end{array} \right\} T_1 T_r = T_r^r \rightarrow \alpha \beta = \alpha^r \left\{ \begin{array}{l} \frac{r}{a} \\ \frac{r}{a} \end{array} \right\} \frac{ra-1}{1} = \alpha^r \Rightarrow \alpha^r - ra + 1 = 0 \Rightarrow \boxed{a=1} \checkmark$$

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$$x^r - rx^r - \omega = 0$$

$$s = -\frac{b}{a} = r$$

$$p = \frac{c}{a} = -\omega$$

$$rp^r - \beta p + rs$$

$$\omega + 1 \cdot \omega + 1/r = \boxed{1/r} \checkmark$$

0

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$$kx^r - rx - y = -rx - r \Rightarrow kx^r - r = 0$$

$$\frac{-\Delta}{\epsilon a} = \frac{1/r - rx}{\epsilon k} = -rx - r \Rightarrow -\frac{r}{k} - y = -rx - r \Rightarrow -\frac{r}{k} - y = -rx - r \Rightarrow x = \frac{1}{k} + \frac{1}{r}$$

$$k\left(\frac{1}{k^r} + \frac{1}{r} + \frac{1}{k}\right) - r = 0 \Rightarrow \frac{1}{k} + \frac{1}{r}k - 1 = 0 \Rightarrow 1 + \frac{1}{r}k^r - k = 0 \Rightarrow k = r$$

$$x_{ext} = \frac{r}{r} = 1 \Rightarrow r - r - y = -\lambda = y_{ext} \checkmark$$

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$$y = -mx^r + mx + 1$$

$$y = -x - m$$

$$\left. \begin{array}{l} y = -mx^r + mx + 1 \\ y = -x - m \end{array} \right\} \rightarrow -0 < m \Rightarrow m < 0$$

$$-1 < m < -\frac{1}{a}$$

$$-1 < m < 0$$

$$\boxed{\text{no solution}} \checkmark$$

$$-mx^r + mx + 1 > -x - m \Rightarrow -mx^r + (m+1)x + m + 1 > 0 \Rightarrow m > -1$$

(1, 1/2)

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$$n = \frac{-b \pm \sqrt{\Delta}}{2a} \rightarrow \frac{-2 \pm \sqrt{4a + 4m}}{-2} < \frac{a}{r} \rightarrow \pm \sqrt{4a + 4m} < 4 \quad -\Delta$$

$$0 \leq 4a + 4m < 16 \rightarrow -4, 4a \leq m < -2, 4a \rightarrow m \in \{-2, -4, -2, -4\}$$

me f

$$n^r = t \rightarrow t^r - vt - a = 0 \rightarrow t = \frac{v \pm \sqrt{4a}}{r} \rightarrow n^r = \frac{v \pm \sqrt{4a}}{r} \quad -\Delta$$

$$n = \pm \sqrt{\frac{v \pm \sqrt{4a}}{r}} \rightarrow s = 0 \quad p = -\frac{v \pm \sqrt{4a}}{r}$$

$$rp^r - rs p + rs = \boxed{4a + v\sqrt{4a}}$$