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$$f(x) = 3^{Ax+B} \quad y = x^r \quad \left. \begin{array}{l} \alpha=1 \rightarrow 3^{A+B} = 1 \quad A+B=0 \\ \alpha=3 \rightarrow 3^{3A+B} = 9 \quad 3A+B=2 \end{array} \right\} \begin{array}{l} A=1 \\ B=-1 \end{array}$$

$$3^{Ax+B} \xrightarrow{\alpha=1} 3^{\alpha-1} \quad \text{نقطه تلاقی با محور y در } \alpha=0 \quad 3^{-1} = \boxed{\frac{1}{3}}$$

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$$\log_r (t^x + 1\omega) = x + 3 \quad r^{(x+3)} = r^x + 1\omega \quad r^x \times r^3 = (r^x)^r + 1\omega \xrightarrow{r^x = t}$$

$$\Delta t = t + 1\omega \quad t^r - \Delta t + 1\omega = 0 \quad (t - \omega)(t - 3) = 0$$

$$\xrightarrow{t = \omega} r^x = \omega \quad x = \log_r \omega \quad \xrightarrow{t = 3} r^x = 3 \log_r 3$$

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$$\log_r \omega + \log_r 3 = \log_r \omega \times 3 = \boxed{\log_r 1\omega}$$

$$\begin{aligned} (\log_r 3)^r + \log_r 1\omega \times \log_r 1\omega &\rightarrow \log_r 3^{r \times (1\omega)} = r \log_r 1\omega + \log_r 3 = r + \log_r 3 \\ \log_r 1\omega \times 3 &= \log_r 1\omega + \log_r 3 = 1 + \log_r 3 = 1 + \log_r \frac{3}{1\omega} = 1 + \log_r 1\omega + \log_r 3 = r - \log_r 3 \\ \rightarrow (\log_r 3)^r + (r - \log_r 3) + (r + \log_r 3) &= (\log_r 3)^r + r - (\log_r 3)^r = \boxed{1\omega} \end{aligned}$$

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$$\log_r (x^r - 2x + 1) + 3 \log_r (1-x) = \omega$$

$$x^r - 2x + 1 = (x-1)^r = (1-x)^r \rightarrow r \log_r (1-x) + 3 \log_r (1-x) = \omega \rightarrow$$

$$\omega \log_r (1-x) = \omega \quad \log_r (1-x) = 1 \quad 1-x = 10 \quad x = -9$$

$$\log_r (-9) \xrightarrow{x=-9} \log_r 9 = \boxed{2}$$

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$$\log_r (x^r + 2x + 1) + \log_r (x-2) = 3 \rightarrow \log_r (x^r + 2x + 1)(x-2) = 3 \rightarrow$$

$$\log_r x^{r-1} = 3 \rightarrow x^{r-1} = 1\omega \quad x^r = 14 \quad x = \sqrt[r]{14} = r \frac{r}{r}$$

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$$\log_r x \xrightarrow{x=r \frac{r}{r}} \log_r r \frac{r}{r} = \frac{r}{r} \log_r r = r \times 1 = \boxed{r}$$

$$\log(r-x) - \log \frac{1}{(x-r)^r} = r$$

$$\frac{1}{(x-r)^r} = \frac{1}{(r-x)^r} = (r-x)^{-r} \rightarrow \log(r-x) - \log(r-x)^{-r} = r \quad \text{⑤}$$

$$\log(r-x) + r \log(r-x) = r \quad \text{or} \quad r \log(r-x) = r \quad \log(r-x) = 1 \quad r-x = 1 \quad x = -1$$

$$\log \frac{(-x)}{\sqrt{r}} \xrightarrow{x=-1} \log \frac{1}{\sqrt{r}} = \log \frac{r^r}{r} = \frac{r}{r} \log r = 4 \times 1 = \boxed{4}$$

$$r^{(x^r-r)} = 1 \rightarrow r^{(x^r-r)} = r^{rx} \quad x^r - r = rx \quad x^r - rx - r = 0 \rightarrow$$

$$\Delta = (-r)^2 - 4 \times 1 \times (-r) = r^2 \quad x = \frac{r \pm \sqrt{r^2}}{r} = \frac{r \pm r\sqrt{4}}{r} = \frac{r(1 \pm \sqrt{4})}{r} = 1 \pm \sqrt{4}$$

$$\log \frac{(x-r)}{4} \xrightarrow{x=1+\sqrt{4}} \log \frac{1+\sqrt{4}-r}{4} = \log \frac{\sqrt{4}}{4} = \boxed{\frac{1}{r}}$$

$$\xrightarrow{x=1-\sqrt{4}} \log \frac{1-\sqrt{4}-r}{4} = \log \frac{-\sqrt{4}}{4} \quad \text{X}$$

$$\log \frac{r}{r} = \frac{\omega}{\lambda} \quad \log \frac{1}{1\lambda} \rightarrow \log \frac{r^r}{1\lambda} = r \log \frac{r}{1\lambda} \rightarrow \log \frac{r}{1\lambda} = \frac{\log r}{\log \frac{1}{\lambda}} = \frac{\log r}{\log \frac{r}{r}} \rightarrow$$

$$\frac{\log r}{\log \frac{r}{r} + \log \frac{r}{r}} = \frac{\log r}{r \log \frac{r}{r} + \log \frac{r}{r}} = \frac{\log r}{r + \log \frac{r}{r}} = \frac{\frac{\omega}{\lambda}}{r + \frac{\omega}{\lambda}} = \frac{\frac{\omega}{\lambda}}{\frac{r\lambda + \omega}{\lambda}} = \boxed{\frac{\omega}{r\lambda + \omega}} \quad \text{①}$$

$$\log \frac{r}{r} = 0, \lambda \rightarrow \frac{1}{r} \log \frac{r}{r} = \frac{r}{\omega} \quad \log \frac{r}{r} = \frac{\lambda}{\omega}$$

$$\log \frac{r}{1r} = \frac{\log \frac{r}{r}}{\log \frac{r}{r}} = \frac{\log \frac{r}{r} + \log \frac{r}{r}}{r \log \frac{r}{r} + \log \frac{r}{r}} = \frac{1 + \log \frac{r}{r}}{r + \log \frac{r}{r}} = \frac{1 + \frac{\lambda}{\omega}}{r + \frac{\lambda}{\omega}} = \frac{\frac{r\omega + \lambda}{\omega}}{\frac{r\omega + \lambda}{\omega}} = \boxed{\frac{r\omega + \lambda}{r\omega + \lambda}} \quad \text{⑤}$$

$$(a \log r) x^r + ax + b \log r = 0 \xrightarrow{x=-1} (a \log r) - a + b \log r = 0 \rightarrow$$

$$b \log r = a - a \log r \quad b \log r = a(1 - \log r) \quad \frac{b}{a} = \frac{1 - \log r}{\log r} \xrightarrow{1 = \log 10} \frac{\log \frac{10}{r}}{\log r}$$

$$\frac{b}{a} = \frac{\log \omega}{\log r} = \log_r \omega$$

$$(\sqrt{r}) \frac{b}{a} = r \xrightarrow{\frac{1}{r} \times \log \omega} r \log_r \omega = r \log_r \omega = \sqrt{\omega} \log_r \omega = \boxed{\sqrt{\omega}}$$