

$$\begin{aligned}
 x=1 &\rightarrow y=x^r \rightarrow 1 \\
 f(1) &= r^{A+B} \rightarrow r^{A+B}=1 \rightarrow A+B=0 \\
 x=3 &\rightarrow y=x^r \rightarrow 9 \\
 f(3) &= r^{2A+B} \rightarrow r^{2A+B}=r^r \rightarrow 2A+B=r
 \end{aligned}
 \left. \vphantom{\begin{aligned} x=1 \\ x=3 \end{aligned}} \right\} \begin{aligned} A=1 \\ B=-1 \end{aligned} \quad \begin{aligned} f(x) &= r^{x-1} \\ f(0) &= r^{-1} = \frac{1}{r} \end{aligned}$$

(۲) ①

$$\log_r \varepsilon^{\alpha+10} = \alpha+3 \rightarrow r^{\alpha+3} = r^{\alpha} + 10 \xrightarrow{r^{\alpha}=t} t^2 - 11t + 10 = 0 \rightarrow (t-3)(t-5) = 0$$

$$\begin{aligned}
 t=3 &\rightarrow r^{\alpha}=3 \xrightarrow{\log_r} \log_r r^{\alpha} = \log_r 3 \rightarrow \alpha = \log_r 3 \\
 t=5 &\rightarrow r^{\alpha}=5 \xrightarrow{\log_r} \log_r r^{\alpha} = \log_r 5 \rightarrow \alpha = \log_r 5
 \end{aligned}
 \left. \vphantom{\begin{aligned} t=3 \\ t=5 \end{aligned}} \right\} \log_r 3 - \log_r 5 = \frac{\log 10}{r}$$

(۲) ②

$$(\log_r r)^r + \log_r^{12} \times \log_r^{13} \rightarrow (\log_r r)^r + (\log_r r + \log_r r) \times (\log_r r + \log_r r)$$

$$\xrightarrow{\log_r r + \log_r r = 1} (\log_r r)^r + (2 - \log_r r)(2 + \log_r r) = \frac{\varepsilon - (\log_r r)^r}{\varepsilon}$$

(۲) ③

$$\log(x^r - rx + 1) + r \log(1-x) = 8 \rightarrow \log((1-x)^r) + r \log(1-x) - 8 = 0$$

$$\log(1-x) = t \rightarrow 2t + 3t - 8 = 0 \rightarrow t = 1 \quad \log(1-x) = 1 \rightarrow 1-x = 1 \rightarrow x = -1$$

$$\log(-x) \rightarrow \log \frac{9}{r} = \frac{9}{r} \rightarrow \text{جواب}$$

(۲) ④

$$\log_r (x^r + rx + \varepsilon) + \log_r (x-r) = r \rightarrow \log_r (x-r)(x^r + rx + \varepsilon) = r$$

$$(x^r - 1) = r \rightarrow x^r = 14 \rightarrow x = \sqrt[r]{14} \quad \log_r \frac{x}{r} = \log_r \frac{r^{\frac{\varepsilon}{r}}}{r} = \frac{\varepsilon}{r} \log_r r = \frac{\varepsilon}{r}$$

(۲) ⑤

$$r - x = t$$

$$\log t - \log \frac{1}{t^r} = r \rightarrow \log \frac{t}{t^r} = r \rightarrow \log t^r = r \rightarrow t^r = 10^r \Rightarrow t = 10$$

$$r - x = 10 \rightarrow x = -10 \rightarrow \log \frac{1}{r^c} = \log \frac{c^r}{r^t} = \frac{r}{t} \log c = 4 \rightarrow \text{جواب}$$

$$r^{x^c - r} = 11^x \rightarrow r^{x^c - r} = r^{\epsilon x} \rightarrow x^c - r = \epsilon x \rightarrow x^c - \epsilon x - r = 0$$

$$x = r \pm \sqrt{r} \rightarrow r + \sqrt{r} \rightarrow \log \frac{r + \sqrt{r} - r}{r} = \log \frac{\sqrt{r}}{r} = \log \frac{1}{\sqrt{r}} \rightarrow \text{جواب}$$

\downarrow $r - \sqrt{r}$ قوی

$$\log \frac{r^r}{r^r} = f \quad \log \frac{r}{r} = \frac{\Delta}{\lambda} \rightarrow r = r \frac{\Delta}{\lambda}$$

$$\log \left(r \frac{\Delta}{\lambda} \right)^r = \log \frac{r^{\frac{\Delta}{\lambda}}}{r^{\frac{\lambda}{\lambda}}} \rightarrow \frac{\Delta}{\lambda} \log r = \frac{\Delta}{\lambda} = \frac{\Delta}{\lambda} \rightarrow \text{جواب}$$

$$\log \frac{r}{r^c} = \log \frac{r^r}{r^r r^{\frac{\lambda}{\Delta}}} = \log \frac{r^{\frac{1r}{\Delta}}}{r^{\frac{1\lambda}{\Delta}}} = \log \frac{r^{\frac{1r}{\Delta}}}{r^{\frac{1\lambda}{\Delta}}}$$

$$\log \frac{r}{r^c} = 0.18 \rightarrow r = r^{\frac{1r}{\Delta}} \rightarrow r = r^{\frac{\lambda}{\Delta}}$$

$$\frac{\frac{1r}{\Delta}}{\frac{1\lambda}{\Delta}} \log r = \frac{1r}{1\lambda} \rightarrow \text{جواب}$$

$$(a \log r) x^r + a x + b \log r = 0 \quad \frac{x = -1}{a \log r - a + b \log r = 0}$$

$$\log r (a+b) = a \rightarrow \log \frac{r}{10} = \frac{a}{a+b} \rightarrow \log \frac{10}{r} = \frac{a+b}{a} \rightarrow \log \frac{r}{10} + \log \frac{10}{r} = 1 + \frac{b}{a}$$

$$\log \frac{10}{r} = \frac{b}{a} \rightarrow \left(\frac{10}{r} \right)^{\frac{b}{a}} = r^{\log \frac{10}{r}} \rightarrow \frac{10^{\frac{b}{a}}}{r^{\frac{b}{a}}} = \frac{1}{r} = \frac{1}{\sqrt{10}} \rightarrow \text{جواب}$$