

$$\log_n m = a \rightarrow \log_{mn} m^n = b \rightarrow \frac{\log m^n}{\log mn} = b = \frac{\log m^n + 1}{\log m^n + 1} \cdot \frac{\log m^n + 1}{a+1}$$

$$\frac{r(a+1)-1}{a+1} = r - \frac{1}{a+1} \rightarrow 1 < r - \frac{1}{a+1} < r \rightarrow [b] = 1$$

الف) $\sqrt{\frac{n}{\log n}} \rightarrow n > 0, \rightarrow \log n \neq 0 \rightarrow n \neq 1$ و $n \sim \infty \rightarrow \log n = -2$

$$\rightarrow \log n^r - n - r \sim (n-r)(n+1) > 0 \quad \frac{-1}{2} - \frac{r}{1} < 0 \quad \left(\begin{array}{l} 0 < n < 1 \\ (-\infty, r) \end{array} \right)$$

$$\rightarrow n^r - 1 > 0 \rightarrow n^r \geq 1 \rightarrow n \geq 1, n \leq -1$$

$(r, +\infty)$

$$r \log_a a + \log_a \sqrt[n]{n} = r \xrightarrow{n=9} r \log_a a + \log_a r = r \rightarrow \log_a a + \log_a r = r$$

$$m + \frac{1}{m} = \frac{m^r + 1}{m} = r \rightarrow m^r - rm + 1 = 0 \rightarrow (m-1)^r = 0 \rightarrow m = 1 = \log_a a$$

$$\sim a = r$$

$$\log \frac{a}{r} = \log a - \log r = \log 1 - \log r - \log r = -2$$

$$\log a = r \log r = 18$$

$$\log 10 = \log 2 + \log r = \log 1 - \log r + \log r = 1/1$$

$$\sim 3m^r - 18m - 1/1 = 0 \xrightarrow{x^1} 3m^r - 18m + 1 = 0 \xrightarrow{m^2} m^2 - 18m - 3 = 0$$

$$\sim (1), \left(-\frac{11}{3} \right) \xrightarrow{\text{انتخاب}} \frac{16}{3}$$

$$\log_v v = r/18$$

$$\log_r r = 10 \rightarrow \log_v v = r$$

$$\log_{1/18} 1 = \frac{\log_{1/18} 1}{\log_{1/18} 1} = \frac{\log_v v + \log_r r}{\log_v v + \log_r r} = \frac{r}{r/18} = \frac{r}{r/18}$$

$$\log_{10}^y = \frac{\log_r^y}{\log_{10}^r} = \frac{\log_r^y + 1}{\log_r^0 + 1} \quad * , \log_r^0 = 10 \quad \frac{\frac{1}{14} + \frac{14}{14}}{\frac{10}{1} + \frac{1}{1}} = \frac{\frac{15}{14}}{\frac{11}{1}} = \frac{15}{14} = \frac{15}{14}$$

$$\log_{14}^y = \frac{1}{1} \rightarrow \frac{1}{\log_{14}^r} = \frac{1}{1} \rightarrow \log_{14}^r = \frac{1}{1} *$$

$$\frac{14}{1} = \frac{1}{1} = \frac{14}{1} = 14$$

$$\log_{\frac{1}{r}}^m = m \rightarrow \frac{1}{r} \log_{\frac{1}{r}}^m = \frac{1}{r} (\log_r^m + r \log_r^r) \Rightarrow \frac{1}{r} (1 + r \log_r^r) = m$$

$$\log_{\frac{1}{r}}^m = \frac{1}{r} \log_r^m = \frac{1}{r} (\log_r^m + \log_r^r)$$

$$r m = 1 + r \log_r^r$$

$$\log_r^r = \frac{r m - 1}{r} *$$

$$\frac{1}{r} (1 + \frac{r m - 1}{r}) = \frac{1 + r m - 1}{r}$$

$$\left(\frac{r}{1}\right)^{r^{n-1}} = \left(\frac{a}{r}\right)^{r^n} \rightarrow \frac{r^{r^{n-1}}}{a} = \frac{a^{r^n}}{r^{r^n}} \xrightarrow{\text{نقل}} r^{r^{n-1} + r^n} = a^{r^n + r^n}$$

$$\sim r^{r^n + r^{n-1}} = \dots \xrightarrow{\text{نقل}} n^{r^n + r^{n-1}} = \dots \sim n = \frac{1}{r} k^{-1} \sim \dots$$

$$\log_{\frac{1}{r}}^{r^{n+1}} = \log_{\frac{1}{r}}^r = \frac{r}{r}$$

$$\frac{1}{r} \log_r^b = \frac{r}{r} (a+1) \Rightarrow \log_r^b = r \log_r^a \rightarrow b = r^a$$

$$\log_{\frac{1}{r}}^r = \log_r^r$$

$$\log_{\frac{1}{r}}^r = \log_{\frac{1}{r}}^r = r$$

$$s = \frac{b}{r a} \sim \frac{1}{s} = \frac{r a}{b}, \forall a = \frac{b+c}{r} \rightarrow r a = b+c \xrightarrow{+a} \frac{b+c}{a} = r$$

$$\log_r^r = \frac{b}{r a} = \frac{r a}{b} \sim r \log_r^r = \frac{r a}{b} \rightarrow \log_r^r = \frac{r a}{b} \xrightarrow{+r} \frac{1}{r} \log_r^r = \frac{a}{b}$$

$$\xrightarrow{\text{نقل}} r \log_r^r = \frac{b}{a} \sim \frac{c}{a} = r - r \log_r^r = 1 - r \log_r^r = \frac{c}{a}$$

$$\xrightarrow{\text{نقل}} \left(\frac{1}{r}\right)^{\frac{c}{a}} = r^{\frac{1}{a} \times r \log_r^r} = r^{\log_r^r} = \log_r^r$$

مرباض