

۱۴، ۲۵

$n^a = m$

$(mn)^b = m^n$

$(a+b)^b = n$

$a+b = a+b$

$b = \frac{a+b}{a+b} = 1 + \frac{a}{a+b}$

$\lim_{a \rightarrow 0} [b] = 1$

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$\log \frac{1}{x} = -\log x$

$a > 0$

$D_f = (0, +\infty) \cup \{1\}$

(الف) ۱، ۲۵

(۱) $a^x - a^{-x} > 0$

(۲) $a^x - 1 > 0$

$R = (-1, 1)$

$D_f = (-\infty, -1) \cup (-1, +\infty)$

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$\log a + \log a = 2 \log a$

$\log a + \frac{1}{\log a} = 5$

$\log a = 1$

$a = 10$

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$(\log a - \log c) a^x + (\log a^2) a^x - (\log a + \log c) = 0$

$a^x + 10a^x - 11 = 0$

$a^x = 1$

$x = 0$

$\log a = 1 - \log c$

$1 - \frac{2}{4} = 1 - \frac{1}{2} = \frac{1}{2}$

$\frac{1}{2}$

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$\log 14 = \log 7 + \log 2$

$\log 7 \rightarrow \log 2 \times \log 10 = \log 2 = \frac{2}{10}$

$\frac{2}{10} + \frac{1}{2} = \frac{3}{5}$

$\log 14 = \frac{3}{5}$

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$$\log_{10}^r = \frac{\log_{10}^r}{\log_{10}^r} = \frac{\log_{10}^r + \log_{10}^r}{1 + \log_{10}^r} = \frac{1 + \log_{10}^r}{1 + \log_{10}^r} = 1 + \frac{1}{10}$$

$$\frac{2/4}{1/4} = \frac{2/4}{1/4} = 2/4 \cdot 4/1 = 2 \checkmark$$

2
6

$$\log_{10}^r = m \quad \log_{10}^r = m-1 \quad \frac{m-1}{r} = \log_{10}^r$$

$$\log_{10}^r = m !!$$

$$\log_{10}^r = \frac{1}{r} (\log_{10}^r + \log_{10}^r) = \log_{10}^r \cdot \frac{m-1}{r} + 1 = \frac{m+r}{r}$$

0
7

$$\left(\frac{a}{r}\right)^{r^r} = \left(\frac{1}{r}\right)^{r^r} \rightarrow r^r = 1 - r^r \quad r^r + r^r = 0$$

$$\log_{10}^r = \log_{10}^r = \frac{r}{r} = 1$$

$$\log_{10}^r = \log_{10}^r = \frac{r}{r} = 1$$

2
1

$$\log_{10}^r = a \quad \log_{10}^r = \frac{r}{r} (1 + r) \rightarrow \frac{r}{r} \log_{10}^r = 1 + a \quad a = \log_{10}^r$$

$$\log_{10}^r = \log_{10}^r = a \quad \log_{10}^r = \log_{10}^r = a$$

$$\log_{10}^r = \log_{10}^r = a \quad \log_{10}^r = \log_{10}^r = a$$

2
9

$$a = \frac{b+c}{r} \rightarrow b = ra - c$$

$$\frac{1}{n_1 + n_2} = \frac{1}{5} = \frac{ra}{b} = \frac{ra}{ra - c} = \log_{10}^r = r \log_{10}^r \rightarrow \frac{ra}{ra - c} = \log_{10}^r$$

$$\frac{ra - c}{ra} = \log_{10}^r \rightarrow 1 - \log_{10}^r = \frac{c}{ra} \rightarrow r - \log_{10}^r = \frac{c}{a}$$

$$(r - \frac{1}{a})^{\frac{c}{a}} = (r - \frac{c}{a})^{\frac{1}{a}} = (r - \log_{10}^r)^{\frac{1}{a}} = (\frac{r}{100})^{\frac{1}{a}} = \frac{1}{2} = \sqrt{a}$$

0
10

$$m = n^a$$

$$\lg_{mn}^{mrn} = b \rightarrow \lg_{na+1}^{na+1} = b \rightarrow \frac{ra+1}{a+1} = b$$

$$b = \frac{ra+1+1-1}{a+1} = r - \frac{1}{a+1} \xrightarrow{a>0} [b] = \boxed{1}$$

الف) $\frac{n}{\lg_{\frac{1}{r}} n} \geq 0 \rightarrow \frac{n}{-\lg_r n} \geq 0 \xrightarrow{n>0} \lg_r n < 0$ (0,1)

$$n < r^0 \rightarrow \boxed{n < 1}$$

$$\lg_n^n = \frac{\lg n}{\lg n} = \frac{r \lg r + \lg r}{r \lg r} = m \rightarrow \frac{\lg r}{\lg r} = \frac{r_{m-1}}{r}$$

$$\lg_r^r = 1 + \lg_r^r = 1 + \frac{\lg r}{r \lg r} = 1 + \frac{1}{r} \left(\frac{r_{m-1}}{r} \right) = \boxed{\frac{r_m + r}{r}}$$