

تکلیف شماره ۲۳ از کتاب ریاضیات پایه

۱) $\log_n^m = a, \log_{mn}^{m^r n} = b$

ا) $[b] = 1 \rightarrow \frac{\log_n^{m^r n}}{\log_n^{mn}} = b = \frac{\log_n^{m^r+1}}{\log_n^{m+1}}$

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

$\int \rightarrow 1 < r - \frac{1}{a+1} < r$

$[b] = 1$

۲) الف) $y = \sqrt{\frac{x}{\log_{\frac{1}{r}} x}}$ $\log_{\frac{1}{r}} x \neq 1 \rightarrow x \neq r$

$\log_{\frac{1}{r}} x = -2 \rightarrow D_f = \{x \mid x < 1\}$

ب) $\frac{\log_{\frac{1}{r}}(x^r - x - r)}{\sqrt{x^r - 1} + 1}$

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

$(x-r)(x+1) > 0$

$\frac{-1}{+1} \frac{r}{-r} \quad x^r - 1 \geq 0 \rightarrow x^r \geq 1 \rightarrow x \geq 1 \quad \cup \quad x \leq -1 \rightarrow$

۳) $r \log_n^a + \log_{\frac{1}{a}}^{\sqrt{x}} = r$

$m + \frac{1}{m} = \frac{m^r + 1}{m} = r \rightarrow m^r - rm + 1 = 0$

$n=a \quad a=1$

$r \log_{\frac{1}{a}}^a + \log_{\frac{1}{a}}^{\sqrt{x}} = r \rightarrow \log_{\frac{1}{a}}^a + \log_{\frac{1}{a}}^{\sqrt{x}} = r$

$\hookrightarrow (m-1)^r \rightarrow m-1 = \log_{\frac{1}{a}}^a$

$a=c$

۴) $\log r = 0,1 \quad \log c = 0,2$

$(\log_{\frac{1}{c}}^{\frac{1}{c}}) x^r + (\log q) x - \log 18 = 0$

$\log_{\frac{1}{c}}^{\frac{1}{c}} = \log \delta - \log r = \log 1 - \log r - \log \frac{1}{c} = 0,1$

$\log q = r \log c = 0,1$

$\log 18 = \log \delta + \log c = \log 1 - \log r + \log c = 0,1$ هدف =

$0,1 x^r - 0,1 x - 1,1 = 0 \rightarrow r x^r - 1 x - 1,1 = 0$

$\hookrightarrow \sqrt{x^r + 1 x - c r} = 0 \rightarrow 1, -\frac{1}{c}$

$$\omega) \log_r^v = r, 1$$

$$\log_{1/2}^1 = 1$$

$$\log_r^r = 1$$

$$\log_r^0 = r$$

$$\log_{1/2}^1 = \frac{\log_r^1}{\log_r^{1/2}} = \frac{\log_r^0 + \log_r^r}{\log_r^r + \log_r^r} = \frac{r}{r+1}$$

$$4) \log_c^0 = 1, 8$$

$$\log_r^r = 1, 4$$

$$\frac{1/8 + 1/4}{1/8 + 1} = \frac{r}{r+1/4}$$

$$\log_{1/2}^1 = 1$$

$$\log_r^0 = 1$$

$$\frac{\log_c^r}{\log_c^0} = \frac{\log_r^r + 1}{\log_c^0 + 1} \rightarrow \log_r^r = 1/4 \rightarrow \frac{1}{\log_c^r} = \frac{1/4}{1}$$

$$v) \log_{1/4}^{1/2} = m \quad \log_{1/2}^r = \frac{1}{r} \log_r^r = \frac{1}{r} (\log_r^0 + \log_r^r)$$

$$\log_{1/4}^r = \frac{1}{c} (\log_r^r + r \log_r^c) \rightarrow \frac{1}{c} (1 - r \log_r^r) \rightarrow cm = 1 + r \log_r^r = m$$

$$\frac{1}{c} = (r + cm - 1) \Rightarrow \frac{1 + cm}{c} \log_r^r = \frac{cm - 1}{r}$$

$$\wedge) (0, 1/2)^{r-1} = \left(\frac{1/2}{1/2}\right)^{r-1} \quad \left(\frac{1/2}{1/2}\right)^{r-1} = \left(\frac{1/2}{1/2}\right)^{c-1} \rightarrow \frac{r^{r-1}}{1/2^{r-1}} = \frac{1/2^{c-1}}{1/2^{c-1}} \rightarrow r^{c-1} + r-1 = 0$$

$$\log_{1/2}^{(4x+1)}$$

$$c-1 + r-1 = 0 \rightarrow m-1 + r-1 = 0 \rightarrow m = \frac{1}{r}, m = -\frac{1}{r}$$

$$\log_{1/2}^{4x+1} = \log_{1/2}^r = \frac{r}{c}$$

$$a) \log_b^a = \frac{r}{c} (1+a), \log_r^r = a \quad \log_1(c \times c - 1) = r$$

$$\log(c-1) = 1 \quad \frac{1}{c} \log_b^r = \frac{r}{c} (1+a) \rightarrow \log_b^r = r \log_r^a \rightarrow b = c^4$$

$$1.) -\sum a n^r + b n + \frac{1}{r} c = 0 \quad s = \frac{b}{\sum a} \rightarrow \frac{1}{s} = \frac{r a}{b}, r a = \frac{b+c}{r} \rightarrow r a = b+c \rightarrow \frac{b+c}{a} = r$$

$$\left(\frac{1}{\sqrt{r}}\right)^{\frac{c}{a}} \quad r \log r = \frac{r a}{b} \rightarrow \log_r^r = \frac{r a}{b} \rightarrow \frac{1}{r} \times \frac{1}{\log_r^r} = \frac{a}{b}$$

$$r \log_r^r = \frac{b}{a}, \frac{c}{a} = r - r \log_r^r = -r \log_r^0 = \frac{c}{a} = r - \log_r^r$$

$$\left[\frac{1}{\sqrt{r}}\right]^{\frac{c}{a}} = r^{-\frac{1}{a} \times r \log_r^0} = r^{\log_r^0} = \frac{1}{\sqrt{r}}$$