

$$m = n^a \Rightarrow \log_{mm}^{m'n} = b \Rightarrow \log_{n^a \times n}^{n^a \times n} = b \Rightarrow \log_{n^{a+1}}^{n^{a+1}} = b \Rightarrow \frac{a+1}{a+1} \log_n^n = b$$

$$\Rightarrow \left[ \frac{a+1}{a+1} \right] = [b] \Rightarrow \left[ 1 + \frac{a}{a+1} \right] = [b] \Rightarrow 1 + \left[ \frac{a}{a+1} \right] = [b] \Rightarrow 0 < \frac{a}{a+1} < 1 \rightarrow [b] = 1$$

الف)  $y = \sqrt{\frac{x}{\log \frac{x}{r}}}$   $x > 0$   
 $\log \frac{x}{r} \neq 0 \rightarrow x \neq r$

$D_f = (0, 1)$

$\rightarrow y = \log_{\frac{x}{r}}(x^2 - x - r)$   $x^2 - x - r > 0$   
 $\frac{x^2 - x - r}{\sqrt{x^2 - 1} + 1}$   $x = -1, x = 2$

$D_f = (-\infty, -1) \cup (2, +\infty)$

$$r \log_n^a + \log_a^r \Rightarrow r \log_n^a + \frac{1}{r} \log_n^r \Rightarrow r \log_n^a + r \log_n^a = r$$

$$\log_n^a = \frac{1}{r} \rightarrow a = n^{\frac{1}{r}} \rightarrow n = 9 \rightarrow a = 9^{\frac{1}{r}} = 3$$

$$(\log a - \log c) x^r + (r \log c) x - (\log c + \log a) = 0 \Rightarrow x = 1, x = \frac{c}{a}$$

$$\frac{c}{a} = \frac{-\log c - \log a}{\log a - \log c} = \frac{-0.18 - 1.01}{1.01 - 0.18} = \frac{-1.19}{0.83} = -1.43$$

$$x_1 - x_2 = 1 - (-1.43) = 2.43 = \frac{18}{c}$$

$$\log_a^r \times \log_r^a = 0.18 \times 2.11 \rightarrow \log_a^r = 1.18$$

$$\log_{18}^1 = \frac{\log 1}{\log 18} = \frac{0}{1.25} = 0$$

$$\log_{18}^6 = \frac{r \log_a^r + \log_a^r}{\log_a^r + \log_r^a} = \frac{0.18 + 1}{0.18 + 2.11} = \frac{1.18}{2.29} = \frac{18}{19}$$

$$\log_c^a \times \log_r^c = \log_r^a = 2.11$$

$$\log_{18}^4 = \frac{\log 4}{\log 18} = \frac{\log 2^2}{\log 18} = \frac{2 \log 2}{\log 18} = \frac{2 \times 0.3}{1.25} = \frac{0.6}{1.25} = \frac{12}{25}$$

$$\log_{18}^{12} = \frac{\log 12}{\log 18} \Rightarrow \log_{18}^{12} = \log_{18}^4 + \log_{18}^8 \rightarrow \frac{12}{18} + \frac{1}{18} \log_{18}^8$$

$$\log_{18}^8 = \frac{r}{c} \log_r^8 = \frac{2}{18} \log_{18}^8 = \frac{1}{9} \log_{18}^8$$

$$\log_{18}^{12} = m \rightarrow \log_{18}^4 + \log_{18}^8 = m \rightarrow \frac{12}{18} + \frac{1}{18} \log_{18}^8 = m \rightarrow \frac{12}{18} + \frac{1}{18} \log_{18}^8 = m$$

$$\log_{18}^8 = \frac{c(m-1)}{r} \cdot \log_{18}^{12} = \frac{\frac{12}{18} + \frac{1}{18} \log_{18}^8}{\frac{1}{18}} = \frac{\frac{12}{18} + \frac{1}{18} \left( \frac{c(m-1)}{r} \right)}{\frac{1}{18}} = \frac{12}{18} (m+1)$$

$$\left(\frac{\Sigma}{1.}\right)^{r_n-1} = \left(\frac{a^r}{r^c}\right)^{r^r} \rightarrow \left(\frac{r}{a}\right)^{r_n-1} \rightarrow \left(\frac{a}{r}\right)^{r_n-1} \rightarrow r_n-1 = -r_n^r \quad (1)$$

$$r_n^r + r_n - 1 = 0 \rightarrow \left(n + \frac{r}{r}\right) \left(n - \frac{1}{r}\right) = 0 \rightarrow n = -1 \text{ وَقَوْعًا } 9n+1 = -1 \times \quad (5)$$

$$\rightarrow n = \frac{1}{r} \rightarrow \log_{r^c}^{(r+1)} = \log_{r^c} r^r = \frac{r}{c} \log_r r = \frac{r}{c} \quad (9)$$

$$\frac{1}{c} \log_r^b = \frac{r}{c} (a+1) \rightarrow \log_r^b = ra + r \quad r^{(ra+r)} = b \rightarrow (r^a)^r \times r = b \rightarrow b = cr \quad (9)$$

$$\log(c^b - 1) \rightarrow \log(1.0) = (r) \quad (5)$$

$$S = \frac{-b}{-\Sigma a} \rightarrow \frac{b}{\Sigma a} = \log \Sigma \rightarrow \frac{a}{b} = \frac{\log \Sigma}{\Sigma} = \frac{r \log r}{r} = \frac{\log r}{r}$$

$$ra = b + c \rightarrow r \frac{a}{b} = 1 + \frac{c}{b} \quad \frac{a}{b} = \frac{\log r}{r} \rightarrow r \left(\frac{\log r}{r}\right) = 1 + \frac{c}{b} \quad (5)$$

$$\frac{c}{b} = -1 + \log r \rightarrow \frac{c}{a} = \frac{-1 + \log r}{\frac{\log r}{r}} \Rightarrow \frac{c}{a} = \frac{\log r - \log 1}{\frac{1}{r} \log r} = \frac{\log \frac{r}{1}}{\frac{1}{r} \log r} = \frac{\log \frac{1}{a}}{\frac{1}{r} \log r}$$

$$\frac{\log \frac{1}{a}}{\log \sqrt{r}} = \log \frac{1}{\sqrt{r}} \rightarrow \left(\frac{1}{\sqrt{r}}\right)^{\frac{c}{a}} = \left(\frac{1}{a}\right)^{\log \frac{1}{\sqrt{r}}} = \left(\frac{1}{a}\right)^{\log \frac{1}{r}} = \frac{1}{a} \left(\frac{1}{r}\right)^{\log r} = \left(\sqrt{a}\right) \quad (9)$$