

← $\frac{1}{\log m} \rightarrow 0$

← 1

$$\log_{mn}^{mn} = \log_{mn}^{mn} + \log_{mn}^m = 1 + \frac{1}{\log_{mn}^m} = 1 + \frac{1}{1 + \frac{1}{a}} = b$$

← $\frac{1}{\log m} \rightarrow 0$

$$\Rightarrow [b] = 1$$



$$\sqrt{\frac{n}{\log n^{\frac{1}{r}}}} \Rightarrow n > 0$$

$$\log n^{\frac{1}{r}} \neq 0 \Rightarrow n \neq 1$$

$$\frac{n}{\log n^{\frac{1}{r}}} \neq 0 \Rightarrow \begin{array}{c} 0 \\ - \quad + \quad 0 \end{array}$$

← $\frac{1}{\log m} \rightarrow 0$

← 1

$$D_f = (0, 1)$$



$$n^r - n \cdot r \neq 0 \Rightarrow (n-r)(n+1) > 0$$

← $\frac{1}{\log m} \rightarrow 0$

$$\Rightarrow \begin{array}{c} -1 \quad r \\ + \quad - \quad + \end{array}$$



$$n^2 - 1 \neq 0 \Rightarrow (n-1)(n+1) \neq 0 \Rightarrow \begin{array}{c} -1 \quad 1 \\ + \quad - \quad + \end{array}$$

$$\sqrt{n^2 - 1} + 1 \neq 0 \Rightarrow \sqrt{n^2 - 1} \neq -1 \rightarrow \text{مستبعد}$$

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

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

$$\log_a a = t \Rightarrow t + \frac{1}{t} = r \Rightarrow t^2 - rt + 1 = 0$$

$$(t-1)^2 = 0 \Rightarrow t = 1 \Rightarrow \log_a a = 1 \Rightarrow a = a$$

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

$$\log^{\frac{1}{10}} = \log^{10} - \log^r = 1 - 0, r = 0, 1$$

$$0, 1 - 0, r = 0, 1$$

$$r \times 0, r = 0, 1$$

$$0, 1 + 0, r = 1, 1$$

$$0,13x^2 + 0,11x - 1,120 \xrightarrow{\times 10} 13x^2 + 11x - 1120 \rightarrow$$

$$x^2 + 11x - 1120 \rightarrow (x - 11)(x + 11) = 0$$

$$\rightarrow \frac{11}{2} - \left(-\frac{11}{2}\right) = \frac{11}{2}$$

$$\log_v^v = 1,1$$

$$\log_v^v = 0,1 \rightarrow \log_v^v = 1$$

23

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

$$\log_v^v = 1,1$$

$$\log_v^v = 1,1 \rightarrow \log_v^v = \frac{1}{1} = 1$$

22

$$\log_v^v = \frac{\log_v^v}{\log_v^v} = \frac{\log_v^1 + \log_v^1}{\log_v^1 + \log_v^1} = \frac{1}{1}$$

21

$$\log_{x^{\frac{1}{p}} \cdot x^{\frac{1}{q}}} = m \rightarrow \frac{p}{p+q} \log_{x^{\frac{1}{p}} \cdot x^{\frac{1}{q}}} = m$$

$$\rightarrow \log_{x^{\frac{1}{p}} \cdot x^{\frac{1}{q}}} = \frac{p}{p+q} m \rightarrow p \log_{x^{\frac{1}{p}} \cdot x^{\frac{1}{q}}} + \frac{1}{p} \log_{x^{\frac{1}{p}} \cdot x^{\frac{1}{q}}} = \frac{p}{p+q} m$$

$$p \log_{x^{\frac{1}{p}} \cdot x^{\frac{1}{q}}} + 1 = pm \rightarrow \log_{x^{\frac{1}{p}} \cdot x^{\frac{1}{q}}} = \frac{p}{p+q} m - \frac{1}{p+q}$$

$$\log_{x^{\frac{1}{p}} \cdot x^{\frac{1}{q}}} + \log_{x^{\frac{1}{p}} \cdot x^{\frac{1}{q}}} = \frac{p}{p+q} m + \frac{p}{p+q} \rightarrow \log_{x^{\frac{1}{p}} \cdot x^{\frac{1}{q}}} = \frac{p}{p+q} m + \frac{p}{p+q}$$

$$\frac{1}{10} = \frac{p}{3}$$

$$\left(\frac{p}{3}\right)^{pn-1} = \left(\frac{p}{3}\right)^{-pn^r} \rightarrow pn-1 = -pn^r$$

$$pn^r + pn-1 = 0 \rightarrow n^r + pn - p = 0 \rightarrow (n-1)(n+p)$$

$$9n+1 \rightarrow 9 \times \frac{1}{3} + 1 = 4$$

$$\log_{\frac{1}{3}} = \frac{1}{3} \log_{\frac{1}{3}} = \frac{1}{3}$$

$$\log_{\frac{1}{3}} = a$$

$$\log_{\frac{1}{3}} b = \frac{1}{3} (1+a)$$

$$\rightarrow \frac{1}{3} \log_{\frac{1}{3}} b = \frac{1}{3} (1+a)$$

$$\log_r b = r + r\alpha \rightarrow \log_r b = \log_r r + \log_r r^\alpha \rightarrow$$

$$\log_r b = \log_r r^\alpha \rightarrow b = r^\alpha$$

$$r \times r^\alpha = 12100 \rightarrow \log_{10}^{100} = r$$

$$\text{logarithmic scale} = \frac{ra}{b}, r \log r \Rightarrow \frac{ra}{b} = \log r \leftarrow 10$$

$$b = \frac{ra}{\log r}$$

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

$$\frac{c}{a} = \frac{ra-b}{a} = r - \frac{b}{a}, r - \left(\frac{ra}{\log r} \times \frac{1}{a} \right) = r - \frac{r}{\log r}$$

$$r - r \log_{10}^{10} = r - \log_{10}^{100} \rightarrow \frac{1}{\sqrt{r}} = \left(r^{-\frac{1}{r}} \right)^{r(1 - \log_{10}^{10})}$$

$$r^{-\frac{1}{r}} \log_{10}^{10} = r \log_{10}^{100} \rightarrow \log_{10}^{100} = \log_{10}^{10} \log_{10}^{10}$$

$$= \sqrt{r}$$

