

$$\log_m^n = a \quad \log_{mn}^{m'n} = b \rightarrow = 1 + \log_m^n$$

$$\rightarrow = 1 + \frac{1}{\log_m^n} = 1 + \frac{1}{\log_m^n + 1} = 1 + \frac{1}{1 + \frac{1}{a}}$$

$$\rightarrow = \frac{2a+1}{a+1} = b \xrightarrow{a>0} \frac{2(a+1)-1}{a+1} = b \rightarrow \text{یعنی } b \text{ کجی کمتر از } 1 \text{ است.}$$

$$\rightarrow [b] = 1$$

الف) $y = \sqrt{\frac{n}{\log_{\frac{n}{2}}}}$ $\textcircled{1} \log_{\frac{n}{2}} \neq 0 \rightarrow n \neq 1$ $\textcircled{2} n > 0$ $\textcircled{3} \frac{0}{\frac{0}{2} + \frac{0}{2}} -$

$$\rightarrow Dy = (0, 1)$$

ب) $y = \frac{\log(n^2 - n - 2)}{\sqrt{n^2 - 1} + 1}$ $\textcircled{1} n^2 - 1 \geq 0 \rightarrow \frac{-1}{\pm 1 - 1} \rightarrow n \geq 1$ $n \leq -1$

$$\textcircled{2} \sqrt{n^2 - 1} + 1 \neq 0 \rightarrow \checkmark$$

$$\textcircled{3} n^2 - n - 2 > 0 \rightarrow \frac{-1}{\pm 1 - 1} \rightarrow n > 2$$

$$\rightarrow Dy = (-\infty, -1) \cup (2, \infty)$$

$$2 \log_a^n + \log_a^{\sqrt{n}} = 2 \xrightarrow{n=9} \log_a^{9^2} + \log_a^3 = 2$$

$$\rightarrow \log_a^{81} + \frac{1}{\log_a^{81}} = 2 \xrightarrow{\log_a^{81} = t} t + \frac{1}{t} = 2 \rightarrow t = 1$$

$$\rightarrow \log_a^{81} = \log_a^9 = 1 \rightarrow a = 3^1 = 3$$

$$\log 2 \approx 0,3 \quad \log 2 \approx 0,4 \rightarrow \log 2 = 1 - \log 2 = 0,7$$

$$\rightarrow \log 12 = 0,4 + 0,7 = 1,1 \quad \log 9 = 0,1$$

$$\log \frac{9}{2} = 0,7 - 0,4 = 0,3 \rightarrow 0,3 n^2 + 0,1 n - 1,1 = 0$$

$$\rightarrow 3n^2 + n - 11 = 0 \xrightarrow{\text{اختلاف}} \frac{\sqrt{\Delta}}{2a} = \frac{\sqrt{44 + 132}}{6} = \frac{14}{3}$$

$$\log_7^4 = 2,1 \quad \log_7^2 = 0,2 \quad \log_{16}^{10} = ?$$

$$\rightarrow \log_{16}^{10} = \frac{1}{\log_{16}^4} = \frac{1}{\log_7^4 + \log_7^2} \times$$

$$\log_7^4 = 2 \rightarrow \log_7^{10} = 2$$

$$\rightarrow \log_7^2 = \frac{1}{7} \times \quad \log_7^4 = \frac{\log_7^2}{\log_7^2} = \frac{2,1}{7} = \frac{18}{12}$$

$$\rightarrow \log_{16}^{10} = \frac{1}{\frac{1}{7} + \frac{18}{12}} = \frac{1}{\frac{19}{12}} = \frac{12}{19}$$

$\log_r \Delta = 1, \Delta \quad \log_r^2 = 1,4 \quad \log_{10}^4 = ?$ $\log_r^2 = \frac{1}{1,4} \rightarrow \log \Delta = \frac{\log_r \Delta}{\log_r^2} = \frac{1, \Delta}{\frac{1}{1,4}} = 1, \Delta \times 1,4 = 2,4$ $\rightarrow \log_{10} \Delta = 2,4 + 1,4 = 3,8$ $\rightarrow \log_{10}^4 = \frac{\log_r^4}{\log_{10} \Delta} = \frac{1,4}{3,8} = \frac{14}{38} = 0,4 \Delta$	6
$\log_{\lambda}^m = m \quad \log_r^2 = ?$ $m = \log_{\lambda}^r + \log_{\lambda}^q = \frac{1}{r} + \frac{r}{r} \log_r^2$ $\log_r^2 = \frac{1}{r} \log_r^2 = \frac{1}{r} (\log_r^r + \log_r^2) = 1 + \frac{1}{r} \log_r^2$ $\rightarrow \frac{r}{r} \log_r^2 = m - \frac{1}{r} = \frac{rm-1}{r} \rightarrow \log_r^2 = \frac{rm-1}{r}$ $\rightarrow \log_r^2 = 1 + \frac{rm-1}{r} = \frac{rm-r}{r}$	7
$(0,4)^{rm-1} = \left(\frac{14\Delta}{\lambda}\right)^{rm-1} \rightarrow \left(\frac{r}{\Delta}\right)^{rm-1} = \left(\frac{\Delta}{r}\right)^{rm-1}$ $\rightarrow \left(\frac{r}{\Delta}\right)^{rm-1} = \left(\frac{\Delta}{r}\right)^{-rm+1} = \left(\frac{\Delta}{r}\right)^{rm-1} \rightarrow rm-1 = -rm+1$ $\rightarrow n = \frac{-1 \pm \sqrt{1+16}}{4} \begin{cases} n=-1 \rightarrow \log_{\lambda}^{-1} \propto \\ n=\frac{1}{r} \rightarrow \log_{\lambda}^{\frac{1}{r}} = \frac{r}{r} \end{cases}$	8
$\log_r^2 = a \quad \log_{\lambda}^b = \frac{r}{r} (1+a) \quad \log(rb-1) = ?$ $\rightarrow 1+a = \log_r^4 \rightarrow \frac{r}{r} (\log_r^4) = \log_{\lambda}^{r4} = \log_{\lambda}^b$ $\rightarrow b = r4 \rightarrow \log(101-1) = \log 100 = 2$	9
$-fan^r + b\lambda + \frac{1}{r}c = 0 \quad \frac{rfa}{b} = \log_r^r$ $ra = b + c \rightarrow b = ra - c \rightarrow \frac{rfa}{ra-c} = \log_r^r$ $\rightarrow \frac{ra}{ra-c} = \log_r^r \rightarrow \frac{ra-c}{ra} = \log_{10}^r = 1 - \frac{c}{ra}$ $\rightarrow \frac{c}{ra} = \log_r^{0,0f} \rightarrow \frac{c}{a} = \log_r^{0,0f} \rightarrow \left(\frac{1}{\sqrt[r]{r}}\right)^{\frac{c}{a}}$ $= r^{-\frac{1}{a} \cdot \log_r^{0,0f}} = 0,0f^{-\frac{1}{a}} = r \Delta^{\frac{1}{a}} = \Delta^{\frac{1}{r}} = \sqrt[r]{\Delta}$	10