

$n^a = m \quad (mn)^b = m^b n^b \rightarrow (n^a)^b = n^{ab} \rightarrow n^{b(a+1)} = n^{b(a+1)}$ $a+1 = b(a+1) \rightarrow b = \frac{a+1}{a+1} \rightarrow \frac{a+1}{a+1} = 1 - \frac{1}{a+1} \rightarrow a > 0$ $0 < \frac{1}{a+1} < 1 \rightarrow 1 < b < 2 \rightarrow [b] = 1$	1
$2 \log_a^a + \log_a^{\sqrt{a}} = 2 \rightarrow 2 \log_a^{\frac{1}{2}} + \log_a^{\frac{1}{2}} = 2 \rightarrow \frac{1}{\log_a^{\frac{1}{2}}} + \log_a^{\frac{1}{2}} = 2$ $\log_a^{\frac{1}{2}} = t \rightarrow \frac{1}{t} + t = 2 \rightarrow \frac{1}{t} + t = 2 \rightarrow t = 1$ $\log_a^{\frac{1}{2}} = 1 \rightarrow a = \frac{1}{4}$	2
الف) $\frac{x}{\log x} > 0 \quad \log \frac{1}{x} \neq 0 \rightarrow \log \frac{1}{x} = 0 \rightarrow x \neq 1 \rightarrow x < 1$ ب) $x^2 - x - 2 > 0 \rightarrow (x-2)(x+1) > 0 \rightarrow x > 2 \text{ یا } x < -1$ $0 < x < 1$ $x^2 - 1 > 0 \rightarrow x^2 > 1 \rightarrow x > 1 \text{ یا } x < -1$ $\rightarrow (-\infty, -1) \cup (1, \infty)$	
$\log_{10} = \log \frac{1}{10} = \log 10 - \log 10 = 1 - \log 10 = 0.1$ $\log \frac{a}{b} = \log a - \log b = 0.1 - 0.2 = 0.1$ $\log 9 = \log 3^2 = 2 \log 3 = 0.18$ $\log 18 = \log 3^2 \times 2 = \log 3 + \log 18 = 0.18 + 0.1 = 0.28 \rightarrow 0.18, 0.1, 0.11$	3
$\log^{\frac{1}{2}}_2 \rightarrow \log^{\frac{1}{2}}_2 \rightarrow \log^{\frac{1}{2}}_2 - \log^{\frac{1}{2}}_2 = 0.1 \quad \log^{\frac{1}{2}}_2 = 0.1$ $\log^{\frac{1}{2}}_2 \rightarrow \log^{\frac{1}{2}}_2 \rightarrow \log^{\frac{1}{2}}_2 = 0.1$ $\log^{\frac{1}{2}}_2 = \frac{1}{\log^{\frac{1}{2}}_2}$ $\log^{\frac{1}{2}}_2 = \frac{\log 2}{\log^{\frac{1}{2}}_2} = \frac{0.1}{0.1} = 1$	5

$$\frac{1}{\log \omega} = 1, a$$

$$\frac{1}{\log \mu} = 1, q$$

$$\log_{10}^7 = \log_{10}^4 + \log_{10}^3 = \frac{\varepsilon + \xi}{100} = \frac{\xi \omega}{100}$$

$$\frac{\log \omega}{\log \mu} = 1, a$$

$$\log \omega = 1, \xi$$

$$\log_{10}^4 = \frac{1}{\varepsilon}$$

$$\log_{10}^4 + \log_{10}^3 = \log_{10}^7$$

$$\log_{10}^7 = \frac{\xi \omega}{100}$$

$$\frac{\log \omega}{\log \mu} = 1, a$$

$$\log_{10}^4 + \log_{10}^3 \rightarrow \log_{10}^7$$

$$1, a + 1 = 1, a$$

$$\log_{10}^7 \times \mu \rightarrow \log_{10}^7 \mu + \log_{10}^7 \mu \rightarrow \frac{1}{\mu} \log_{10}^7 \mu + \frac{\mu}{\mu} \log_{10}^7 \mu \rightarrow \frac{1}{\mu} + \frac{\mu}{\mu} \log_{10}^7 \mu = m$$

$$\frac{\mu}{\mu} \log_{10}^7 \mu = m - \frac{1}{\mu} \quad \log_{10}^7 \mu = (m - \frac{1}{\mu}) \times \frac{\mu}{\mu} \quad \log_{10}^7 \mu = (m - \frac{1}{\mu}) \frac{\mu}{\mu} \rightarrow \frac{\mu}{\mu} m - \frac{1}{\mu}$$

$$\rightarrow \frac{1}{\mu} (\frac{\mu}{\mu} m - \frac{1}{\mu}) + 1 \Rightarrow \frac{\mu}{\mu} m - \frac{1}{\mu} + \frac{\varepsilon}{\varepsilon} = \frac{\mu}{\varepsilon} m + \frac{\mu}{\varepsilon} \rightarrow \frac{\mu}{\varepsilon} (m+1)$$

$$\log_{10}^7 \mu = \frac{\mu}{\varepsilon} (\log_{10}^7 \mu + 1) = \log_{10}^7 \mu \rightarrow \frac{\mu}{\varepsilon} (m+1)$$

$$(\frac{\mu}{\omega})^{\mu-1} \rightarrow (\frac{\omega}{\mu})^{1-\mu} = (\frac{\mu \omega}{\lambda})^{\mu-1} \rightarrow (\frac{\omega}{\mu})^{1-\mu} = (\frac{\omega}{\mu})^{\mu-1} \rightarrow 1 - \mu = \mu \omega$$

$$\mu \omega^{\mu} + \mu \omega - 1 = 0 \rightarrow \omega^{\mu} + \omega - \frac{1}{\mu} = 0 \rightarrow (n-1)(a+\omega) = \frac{1}{\mu} \omega \omega$$

$$\log_{10}^7 \mu \rightarrow \log_{10}^7 \mu \rightarrow \frac{\mu}{\mu} \log_{10}^7 \mu = \frac{\mu}{\mu}$$

$$\mu^a = \mu$$

$$\mu^{\frac{\mu}{\mu} + \frac{\mu}{\mu} a} = b \rightarrow \mu^{\mu + \mu a} = b \rightarrow \mu^{\mu} \times (\mu^a)^{\mu} = b$$

$$b = \varepsilon \times 9 = 1, \gamma$$

$$\log(\mu^{\mu} (\mu^a)^{\mu}) = \log(1, \gamma) = 1$$

$$a = \frac{b+C}{r} \rightarrow b = \mu a - c \rightarrow \frac{1}{\mu + \mu \mu} = \frac{1}{5} = \frac{\varepsilon a}{b} = \frac{\varepsilon a}{\mu a - c} = 1, \log$$

$$\rightarrow \frac{\mu a}{\mu a - c} = \log_{10}^7 \frac{\mu \omega}{\mu \omega} \rightarrow \frac{\mu a - c}{\mu a} = \log_{10}^7 \mu \rightarrow 1 - \log_{10}^7 \mu = \frac{c}{\mu a}$$

$$\rightarrow 1 - \log_{10}^7 \mu = \frac{c}{\mu a} \quad (\frac{1}{\mu})^{\frac{c}{a}} = (\frac{1}{\mu})^{\frac{c}{a}} \rightarrow \frac{1}{\mu} = \log_{10}^7 \mu, \frac{1}{\mu}$$

$$(\frac{1}{\mu})^{\frac{c}{a}} = \frac{1}{\mu} \rightarrow (\frac{\varepsilon}{100})^{\frac{1}{\mu}} = \frac{\varepsilon}{100}$$