

Year. Month. Date. ()

$y = 1 - \log_c(ax - b)$ $(0, 2)$, $2 = 1 - \log_c(ax_0 - b) \Rightarrow \log_c^{-b} = -1 \Rightarrow c^{-1} = -b$ (1)
 $b = -\frac{1}{c}$ (2)

$b + c = -\frac{1}{c} \Rightarrow -\frac{1}{c} + c = -\frac{1}{c} \Rightarrow \frac{-1 + c^2}{c} = -\frac{1}{c} \Rightarrow -1 + c^2 = -1 \Rightarrow c^2 = 0 \Rightarrow c = 0$

$(c^2 + 1)(c - \frac{1}{c}) = 0 \Rightarrow \begin{cases} c = -1 \text{ و } 1 \\ c = \frac{1}{c} \end{cases} \Rightarrow b = -\frac{1}{c} \Rightarrow c = \frac{1}{b} \Rightarrow b = -1$ (5)

$\Rightarrow a = 1 - \log_{\frac{1}{c}}(-1/2a + 2) \Rightarrow \log_{\frac{1}{c}}(-1/2a + 2) = 1 \Rightarrow \frac{1}{c} = -1/2a + 2 \Rightarrow \frac{-c}{1} = -\frac{c}{2}a + 2 \Rightarrow a = 1$

$(a + c)b = (1 + \frac{1}{c})x - 2 = (-3)$

$f(x) = 1 + cx^{a+b}$ $(1, 0) \Rightarrow 1 + cx^a = 0 \Rightarrow cx^a = -1$ (2)
 $(0, \frac{1}{c}) \Rightarrow 1 + cx^a = \frac{1}{c} \Rightarrow cx^a = \frac{1}{c} - 1$

$\frac{cx^{a+b}}{cx^a} = \frac{-1}{\frac{1}{c} - 1} \Rightarrow x^b = c \Rightarrow b = 1$ (5)

$f(-1) = 1 + cx^{a+(-1)} \Rightarrow f(-1) = 1 + \frac{cx^a}{-1} \Rightarrow 1 + \frac{-1}{c} = \frac{1}{c}$

$y = c + \log_a(ax + b)$ $(0, 2) \Rightarrow 2 = c + \log_a b$ (1)
 $(1/2, 0) \Rightarrow 0 = c + \log_a \frac{1}{2a + b}$ (2)

$2 = \log_a b - \log_a \frac{1}{2a + b} \Rightarrow 2 = \log_a \frac{b}{1/2a + b}$

$\Rightarrow \frac{b}{1/2a + b} = 2a \Rightarrow 2a + 2ab = b \Rightarrow 2a = b - 2ab$
 $\frac{a}{b} = \frac{1 - 2a}{2}$ (5)

$f(x) = \log_{\frac{1}{2}}(|2^x - 2| - x)$ $|2^x - 2| - x > 0$ (3)

$|2^x - 2| > x \Rightarrow 2^x - 2 > x \Rightarrow 2^x - x - 2 > 0$ (1)
 $\Rightarrow 2^x - 2 < -x \Rightarrow 2^x + x - 2 < 0$ (2)

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

$-1 - c + 1 = 2 + 2^{b-a} \Rightarrow 2^{b-a} = 2 \Rightarrow b - a = 1$ (4)

$f(1) = -1 \Rightarrow f(-1) = 2 + 2^{b+a} = 1 \Rightarrow 2^{b+a} = -1 \Rightarrow a + b = 5$ (5)
 $2^{b-a} = 2 \Rightarrow b - a = 1$

$2^{b-a} = 2 \Rightarrow b - a = 1$ (3)

$$y = a^x - x \quad \begin{matrix} x=1 \rightarrow y=0 \\ x=y \rightarrow y=x \end{matrix} \quad f(x) = -x + \left(\frac{1}{r}\right)^{-x} \rightarrow f(r) = -r + \left(\frac{1}{r}\right)^{-r} = \textcircled{9} \quad \textcircled{9}$$

$$f(x) = -x + \left(\frac{1}{r}\right)^{A+B} \quad \begin{matrix} (1,0) \rightarrow -1 + \left(\frac{1}{r}\right)^{A+B} = 0 \Rightarrow \left(\frac{1}{r}\right)^{A+B} = 1 \Rightarrow A+B = -1 \quad \textcircled{5} \\ (r,r) \rightarrow -r + \left(\frac{1}{r}\right)^{rA+B} = r \Rightarrow \left(\frac{1}{r}\right)^{rA+B} = 2 \Rightarrow rA+B = -2 \\ \hline -A = 1 \rightarrow A = -1, B = 0 \end{matrix}$$

$$m = m_0 \times \left(\frac{\Lambda}{q}\right)^t \quad \frac{1}{c} m_0 = m_0 \left(\frac{\Lambda}{q}\right)^t \Rightarrow \frac{1}{c} = \left(\frac{\Lambda}{q}\right)^t \rightarrow \log_{\frac{\Lambda}{q}} \frac{1}{c} = \log_{\frac{\Lambda}{q}} (\frac{\Lambda}{q})^t \quad \textcircled{11}$$

$$\log_{\frac{\Lambda}{q}} \frac{1}{c} = \log_{\frac{\Lambda}{q}} (\frac{\Lambda}{q})^t = t \left(\log_{\frac{\Lambda}{q}} \Lambda - \log_{\frac{\Lambda}{q}} q \right) \Rightarrow -(\log_{\frac{\Lambda}{q}} \Lambda + \log_{\frac{\Lambda}{q}} q) = t (c \log_{\frac{\Lambda}{q}} \Lambda + r \log_{\frac{\Lambda}{q}} q)$$

$$\log_{\frac{\Lambda}{q}} c = \frac{1}{\log_{\frac{\Lambda}{q}} \frac{1}{c}} = \frac{1}{1/c} = c \quad - \left(\frac{c}{c} + \frac{r}{1/r} \right) = -t \left(r \times \frac{c}{1/r} + r \times \frac{c}{c} \right) \rightarrow t = \frac{19}{c}$$

$$\log_{\frac{\Lambda}{q}} r = \frac{1}{\log_{\frac{\Lambda}{q}} \frac{1}{r}} = \frac{1}{1/r} = r \quad t = \frac{19}{c} \times r = \boxed{c \Lambda \cdot \frac{19}{c}}$$

$$m = m_0 \times \left(\frac{V}{\Lambda}\right)^t \quad \frac{1}{V} m_0 = m_0 \times \left(\frac{V}{\Lambda}\right)^t \rightarrow \frac{1}{V} = \left(\frac{V}{\Lambda}\right)^t \rightarrow \log_{\frac{V}{\Lambda}} \frac{1}{V} = \log_{\frac{V}{\Lambda}} \left(\frac{V}{\Lambda}\right)^t \quad \textcircled{12}$$

$$\Rightarrow -\log_{\frac{V}{\Lambda}} V = t \left(\log_{\frac{V}{\Lambda}} V - \log_{\frac{V}{\Lambda}} \Lambda \right) \quad -\frac{1}{V} = t \left(\frac{1}{V} - \frac{1}{\Lambda} \right) \Rightarrow t = \Lambda$$

$$\log_{\frac{V}{\Lambda}} c = \frac{1}{\log_{\frac{V}{\Lambda}} \frac{1}{c}} = \frac{1}{1/c} = c \quad t = \Lambda \times V = \textcircled{24 \text{ j}}$$

$$\log_{\frac{\Lambda}{c}} \Lambda = \frac{1}{\log_{\frac{\Lambda}{c}} \frac{1}{\Lambda}} = \frac{1}{1/\Lambda} = \Lambda \quad \frac{1}{c} \log_{\frac{\Lambda}{c}} c = \frac{1}{c \times 1/c} = \frac{1}{1} = 1$$

$$A = A_0 \times \left(\frac{99}{100}\right)^n \quad \frac{1}{c} A_0 = A_0 \times \left(\frac{99}{100}\right)^n \Rightarrow \frac{1}{c} = \left(\frac{99}{100}\right)^n \Rightarrow \log_{\frac{99}{100}} \frac{1}{c} = \log_{\frac{99}{100}} \left(\frac{99}{100}\right)^n \quad \textcircled{13}$$

$$\Rightarrow -\log_{\frac{99}{100}} c = n \left(\log_{\frac{99}{100}} \frac{99}{100} \right) \Rightarrow -\log_{\frac{99}{100}} c = n (\log_{\frac{99}{100}} 99 + \log_{\frac{99}{100}} c - \log_{\frac{99}{100}} 100)$$

$$\Rightarrow -0.15 \Lambda = n (0.01 \times c + 0.15 \Lambda - 2) \quad n = \frac{-0.15 \Lambda}{-0.12} = \textcircled{25}$$

