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سنا شیخی محمدی — تا زدیم دفتر

① $y = 1 - \log_c^{(ax-b)}$ $\quad b+c = -\frac{3}{2}$ $\quad (a+c)b$

$(0,2) \to 2 = 1 - \log_c^{a\times 0 - b} \to -1 = \log_c^{-b}$

$b = -\frac{1}{c} \to b = -c \quad b+c = -\frac{3}{2}$

$\frac{-1}{c} + c = -\frac{3}{2} \to \frac{-1+c^2}{c} = -\frac{3}{2} \to -2 + 2c^2 = -3c$

$2c^2 + 3c - 2 = 0 \to c = \frac{-3 \pm \sqrt{9+16}}{4}$

$c = \frac{1}{2}$ ✓ $\quad c = \frac{1}{2}$

$(-1/25, 0) \to 0 = 1 - \log_{\frac{1}{2}}^{-1/25 a + 2} \Rightarrow \frac{1}{2} = -1/25 a + 2 \to a = 1$

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

② $f(x) = 1 + c \times 3^{ax+bx}$ $\quad f(-1) = 9$

$(1,0) \to 0 = 1 + c\times 3^{a+b} \to \frac{-1}{-\frac{1}{3}} = \frac{c\times 3^{a+b}}{c\times 3^a}$

$3^1 = 3^b \quad \boxed{b=1} \quad (0, \frac{2}{3}) \to \frac{2}{3} = 1 + c \times 3^a$

$f(-1) = 1 + c \times 3^{a(-1)} \to 1 + \frac{c\times 3^a}{3} \Rightarrow 1 + \frac{-\frac{1}{3}}{3} = \boxed{\frac{8}{9}}$

③ $y = c + \log_a^{ax+b}$ $\quad \frac{a}{b} = ?$

$(0,2) \to 2 = c + \log_a^b$

$(2,4,0) \to 0 = c + \log_a^{2,4a+b}$

$2 = \log_a^b - \log_a^{2,4a+b} \to 3^2 = \frac{b}{2,4a+b}$

$4a + 2.5b = b \to 4a = -1.5b \quad \frac{a}{b} = \frac{-1.5}{4} = \boxed{-0.375}$

④ $f(x) = \log_{\frac{1}{4}}^{(|x^2-x|-x)}$ $\quad |x^2-x| = x$

$x(x-2)(x+1) = 0$

$|x^2-x| > x \quad D_f = (-\infty, 2) \cup (2, +\infty)$

$x^2 - 2x + x = 0 \to (x+2)(x-1) = 0$

$x = -2, 1$

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$f(-1)=1$.

$f^{-1}(1)=-1$ (۵)

$f(x)=2+2^{bx-a}$ $g(x)=x^2-2x+1$

$g(1)=f(1) \longrightarrow -1-2+1=0=2+2^{b-a} \longrightarrow b-a=1$ $2b-a=?$

$f(-1)=10 \longrightarrow 10=2+2^{b+a}$ $2^3=2^{b+a} \longrightarrow b+a=3$

$\begin{cases} b-a=1 \\ b+a=3 \end{cases}$ $2b-a=3$

$2b=4 \longrightarrow b=2$ $a=1$

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$f(x)=2+\left(\frac{1}{2}\right)^{Ax+B}$ $y=+x^2-x$ $f(a)=?$

$x=1 \longrightarrow 0=-2+\left(\frac{1}{2}\right)^{A+B} \longrightarrow 2=2^{-A-B} \longrightarrow A+B=-1$

$x=2 \longrightarrow 2=-2+2^{-2A+B} \longrightarrow 4=2A+B$

$\begin{cases} A+B=-1 \\ 2A+B=4 \end{cases}$

$A=-1 \quad B=0$

$f(x)=-2+2^{x} \rightarrow f(3)=6$

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$m(t)=a\times\left(\frac{1}{2}\right)^{\frac{t}{4}}=\frac{1}{2}a \longrightarrow \left(\frac{1}{2}\right)^{\frac{t}{4}}=\frac{1}{2}$

$\frac{t}{t_0}=\frac{\log_{\frac{1}{2}}^{\frac{1}{2}}}{\log_{\frac{1}{2}}^{\frac{1}{4}}}=\frac{\log_2^1-\log_2^2}{\log_2^1-\log_2^4}=\frac{0-\log_2^2}{2\log_2^1-2\log_2^2}$

$\log_2^2=\frac{1}{\log_2^2}=\frac{1}{1,2}=\frac{5}{12}$

$\log_3^5=\frac{1}{\log_5^3}=\frac{1}{1,2}=\frac{5}{7}$

$=\frac{-\frac{5}{12}-\frac{5}{7}}{2\times\frac{5}{12}-2\times\frac{5}{7}}=\frac{19}{3}$

$t=38.\ min$

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$m(t)=a\times\left(\frac{7}{8}\right)^{\frac{t}{7}}=\frac{1}{7}a \Longrightarrow \left(\frac{7}{8}\right)^{\frac{t}{7}}=\frac{1}{7}$

$\Rightarrow \frac{t}{7}=\log_{\frac{7}{8}}^{\frac{1}{7}} \Rightarrow \frac{t}{7}=\frac{\log_3^{\frac{1}{7}}}{\log_3^{\frac{7}{8}}}$ $\frac{t}{7}=\frac{\log_5^1-\log_5^7}{\log_5^7-\log_5^1}=\frac{0-\log_5^7}{\log_5^7-3\log_5^2}$

$\log_2^3=\frac{1}{\log_3^2}=\frac{1}{1,4}=\frac{5}{8}$

$=\frac{-\frac{5}{3}}{\frac{5}{7}\times-3+\frac{5}{8}}=8$

$\log_7^2=\frac{1}{\log_2^7}=\frac{1}{0,4}=\frac{5}{2}$

$t=56\ min$

$-\frac{5}{24}$

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$m(t) = m_0 \left(\frac{94}{100}\right)^t = \frac{1}{2} m_0 \rightarrow \left(\frac{94}{100}\right)^t = \frac{1}{2} \rightarrow t = \log_{\frac{94}{100}} \frac{1}{2}$

$t = \frac{\log \frac{1}{2}}{\log \frac{94}{100}} = \frac{\log 1 - \log 2}{\log 94 - \log 100} = \frac{0 - \log 2}{\log 94 - 2}$

$94 = 100 e^{5k} \Rightarrow e^{5k} = \frac{-0.18}{-0.02} = 9 \Rightarrow 5k = \ln 9 \Rightarrow k = \frac{2 \ln 3}{5} = -0.04$

$\Rightarrow \frac{-\log 2}{\log 94 - 2} = \frac{-\log 2}{\log 94 - \log 100} = \frac{-\log 2}{\log \frac{94}{100}} = \frac{\log 2}{\log \frac{100}{94}} = \frac{\log 2}{\log 100 - \log 94} = \frac{\log 2}{2 - \log 94}$

$\Rightarrow \frac{\log 2}{2 - (\log 2 + \log 47)} = \frac{\log 2}{2 - \log 2 - \log 47} = \frac{\log 2}{\log 100 - \log 2 - \log 47} = \frac{\log 2}{\log 100 - \log 94} = \frac{\log 2}{\log \frac{100}{94}}$

$\Rightarrow \frac{\log 2}{\log \frac{94}{100}} = \frac{\log 2}{\log 94 - \log 100} = \frac{\log 2}{\log 94 - 2} = \frac{\log 2}{\log 94 - (\log 2 + \log 47)} = \frac{\log 2}{\log 94 - \log 2 - \log 47}$

$= \frac{\log 2}{\log 94 - \log 94} = \frac{\log 2}{0} = \infty$

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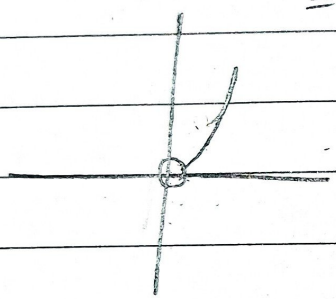
الف) $y = 9 \log_{\frac{1}{3}} x^2 \rightarrow x > 0$

$y = a \log_{\frac{1}{3}} x^2$

$= y = a x^2$

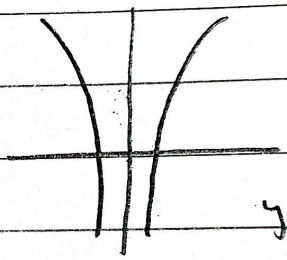
$D_f = (0, +\infty)$



ب) $\log a^{2r} \rightarrow |a|^2$

$y = 2 \log_{10} |x|$

$D_f = \mathbb{R} - \{0\}$



$y = 2 \log_{10} |x|$