یازدهم دختر ب   تکلیف شماره ۲۵   هستی بابری

Year. Month. Date. ( )

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

$b + c = \frac{-3}{2} \to \frac{-1}{c} + c = \frac{-3}{2} \Rightarrow \frac{-1 + c^2}{c} = \frac{-3}{2} \Rightarrow -3c = -2 + 2c^2 \to 2c^2 + 3c - 2 = 0$

$\to (2c + 4)(c - \frac{1}{2}) = 0$ → $c = -2$ غ ق ، $c = \frac{1}{2}$ ✓ $b = \frac{-1}{c} \xrightarrow{c = \frac{1}{2}} b = -2$

$\Rightarrow 0 = 1 - \log_{\frac{1}{2}} (-1/5a + 2) \Rightarrow \log_{\frac{1}{2}} (-1/5a + 2) = 1 \Rightarrow \frac{1}{2} = -1/5a + 2 \Rightarrow \frac{-3}{2} = \frac{-3}{2} a \Rightarrow a = 1$

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

②
$f(x) = 1 + c \times 3^{a+bx} \xrightarrow{(1,0)} 1 + c \times 3^{a+b} = 0 \to c \times 3^{a+b} = -1$

$\xrightarrow{(0, \frac{2}{3})} 1 + c \times 3^a = \frac{2}{3} \to c \times 3^a = \frac{-1}{3}$ (*)

$\frac{c \times 3^{a+b}}{c \times 3^a} = \frac{-1}{\frac{-1}{3}} \Rightarrow 3^b = 3 \to b = 1$

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

③
$y = c + \log_5 (ax + b) \xrightarrow{(0,2)} 2 = c + \log_5 b$

$\xrightarrow{(2/4, 0)} 0 = c + \log_5 (2/4a + b)$

$2 = \log_5 b - \log_5 (2/4a + b) \Rightarrow 2 = \log_5 \frac{b}{2/4a + b}$

$\Rightarrow \frac{b}{2/4a + b} = 25 \to 60a + 25b = b \to 60a = -24b$

$\frac{a}{b} = -0/4$

④
$f(x) = \log_4 (|x^2 - 2| - x)$ $|x^2 - 2| - x > 0$

$|x^2 - 2| > x \to x^2 - 2 > x \to x^2 - x - 2 > 0$ (−1, 2: + | − | +) ①

$\to x^2 - 2 < -x \to x^2 + x - 2 < 0$ (−2, 1: + | − | +) ②

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

⑤
$-1 - 3 + 8 = 2 + 2^{b-a} \Rightarrow 2^{b-a} = 2 \Rightarrow b - a = 1$

$f^{-1}(10) = -1 \Rightarrow f(-1) = 2 + 2^{b+a} = 10 \Rightarrow 2^{a+b} = 8 \Rightarrow a + b = 3$

$2b = 4 \to b = 2 , a = 1$

$2b - a = 2 \times 2 - 1 = 3$

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$y = x^2 - x \xrightarrow{x=1} y = 0$, $\xrightarrow{x=2} y = 2$

$f(x) = -2 + \left(\frac{1}{2}\right)^{-x} \to f(2) = -2 + \left(\frac{1}{2}\right)^{-2} = 2$

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

$(1,0) \to -2 + \left(\frac{1}{2}\right)^{A+B} = 0 \Rightarrow \left(\frac{1}{2}\right)^{A+B} = 2 \Rightarrow A+B = -1$

$(2,2) \to -2 + \left(\frac{1}{2}\right)^{2A+B} = 2 \Rightarrow \left(\frac{1}{2}\right)^{2A+B} = 4 \Rightarrow 2A+B = -2$

$-A = 1 \to A = -1, B = 0$

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$m = m_0 \times \left(\frac{8}{9}\right)^t \qquad \frac{1}{6} m_0 = m_0 \left(\frac{8}{9}\right)^t \Rightarrow \frac{1}{6} = \left(\frac{8}{9}\right)^t \to \log_5 \frac{1}{6} = \log_5 \left(\frac{8}{9}\right)^t$

$\log_5 1 - \log_5 6 = t(\log_5 8 - \log_5 9) \Rightarrow -(\log_5 3 + \log_5 2) = t(3\log_5 2 + 2\log_5 3)$

$\log_5 3 = \frac{1}{\log_3 5} = \frac{1}{1.4} = \frac{5}{7} \qquad -\left(\frac{5}{7} + \frac{5}{12}\right) = t\left(3 \times \frac{5}{12} + 2 \times \frac{5}{7}\right) \to t = \frac{19}{3}$

$\log_5 2 = \frac{1}{\log_2 5} = \frac{1}{2.4} = \frac{5}{12} \qquad t = \frac{19}{3} \times 60 = \boxed{380}$ دقیقه

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$m = m_0 \times \left(\frac{7}{8}\right)^t \qquad \frac{1}{7} m_0 = m_0 \times \left(\frac{7}{8}\right)^t \to \frac{1}{7} = \left(\frac{7}{8}\right)^t \to \log_3 \frac{1}{7} = \log_3 \left(\frac{7}{8}\right)^t$

$\Rightarrow -\log_3 7 = t(\log_3 7 - \log_3 8) \qquad \frac{-10}{6} = t\left(\frac{10}{6} - \frac{15}{8}\right) \Rightarrow t = 8$

$\log_3 7 = \frac{1}{\log_7 3} = \frac{1}{0.6} = \frac{10}{6} \qquad t = 8 \times 7 =$ (۵۶ روز)

$\log_3 8 = \frac{1}{\log_8 3} = \frac{1}{\frac{1}{3}\log_2 3} = \frac{1}{\frac{1}{3} \times 1.6} = \frac{15}{8}$

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$A = A_0 \times \left(\frac{96}{100}\right)^n \qquad \frac{1}{3} A_0 = A_0 \times \left(\frac{96}{100}\right)^n \to \frac{1}{3} = \left(\frac{96}{100}\right)^n \Rightarrow \log_{10} \frac{1}{3} = \log_{10} \left(\frac{96}{100}\right)^n$

$\Rightarrow -\log 3 = n\left(\log \frac{96}{100}\right) \Rightarrow -\log 3 = n(5\log 2 + \log 3 - \log 100)$

$\Rightarrow -0.48 = n(5 \times 0.3 + 0.48 - 2) \qquad n = \frac{-0.48}{-0.02} = 24$

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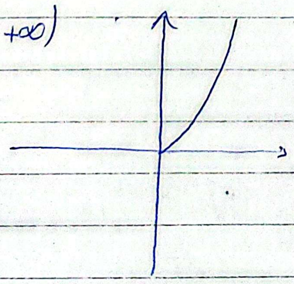
الف) $y = 9^{\log_3 x} = x^{\log_3 9} = x^2$

$D_f = (0, +\infty)$



ب) $y = \log x^2$