باران میرشاه ولایتی - تکلیف شماره ۲۵ - یازدهم دفتری C .

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$$\begin{cases} 2 = 1 - \log_c^{-b} \to b = \frac{-1}{c} \Rightarrow \underset{-\frac{1}{c}}{b} + c = -\frac{3}{2} \to c^2 + \frac{3}{2}c - 1 = 0 \\ 0 = 1 - \log_c^{-1.5a-b} \to \underset{\frac{1}{2}}{c} = -1.5a - b^2 \to a = 1 \end{cases}$$

$(c+2)(c-\frac{1}{2}) = 0$ < -2 غ ق ق ; $\frac{1}{2} \Rightarrow b = -2$

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

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$$\begin{cases} 0 = 1 + C \times 3^{a+b} \Rightarrow \underbrace{C \times 3^a}_{-\frac{1}{3}} \times 3^b = -1 \Rightarrow 3^b = 3 \to b = 1 \\ \frac{2}{3} = 1 + C \times 3^a \to C \times 3^a = -\frac{1}{3} \end{cases}$$

$f(-1) = 1 + \underbrace{C \times 3^a}_{-\frac{1}{3}} \times 3^{-1} = \boxed{\frac{8}{9}}$

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$$\begin{cases} 2 = C + \log_5^b \\ 0 = C + \log_5^{2.4a+b} \end{cases} \Rightarrow \frac{a}{b} = ? \to \frac{\frac{-2b}{5}}{b} = \boxed{-\frac{2}{5}}$$

$2 = \log_5^b - \log_5^{2.4a+b} \Rightarrow \frac{b}{2.4a+b} = 25 \to b = 60a + 25b$

$a = \frac{-24b}{60} = \frac{-2b}{5}$

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$|x^2 - 2| - x > 0 \longrightarrow x^2 - x - 2 > 0$; $-\infty \quad -1 \quad 2 \quad +\infty$: $+ \; - \; +$

$\longrightarrow x^2 + x - 2 < 0$; $-\infty \quad -2 \quad 1 \quad +\infty$: $+ \; - \; +$

$\cap \longrightarrow$ $-2 \quad -1 \quad 0 \quad 1 \quad 2$ $\to$ ~~$D_f = (-2,-1)$~~

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

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$x = 1 \longrightarrow g(1) = -1 - 3 + 8 = 4 \Rightarrow f(\cancel{1}4) = 2 + 2^{b-a} \to b - a = 1$

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

$\longrightarrow b + \overset{b-1}{\cancel{a}} = 3$

$b = 2, a = 1 \Rightarrow \underset{4}{2b} - \underset{1}{a} = \boxed{3}$

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$x = 1 \to y = 1 - 1 = 0$

$x = 2 \to y = 4 - 2 = 2$

$$\Rightarrow \begin{cases} 0 = -2 + (\frac{1}{2})^{A+B} \\ 2 = -2 + (\frac{1}{2})^{2A+B} \end{cases} \Rightarrow f(3) = -2 + (\frac{1}{2})^{-1 \times 3} = \boxed{6}$$

$A = -1, B = 0$

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$m(t) = m_0 \times \left(\frac{8}{9}\right)^t \Rightarrow \left(\frac{8}{9}\right)^t = \frac{1}{6} \xrightarrow[\text{می‌گیریم}]{\text{لگاریتم در مبنای ۵}} t(3\log_5 2 - 2\log_5 3) = -(\log_5 2 + \log_5 3)$

$\frac{1}{6} m_0$

$\begin{cases} \log_2 5 = \frac{24}{10} \to \log_5 2 = \frac{10}{24} \\ \log_3 5 = \frac{14}{10} \to \log_5 3 = \frac{10}{14} \end{cases} \Rightarrow t\left(3\times\frac{10}{24} - 2\times\frac{10}{14}\right) = -\left(\frac{10}{24} + \frac{10}{14}\right)$

$t = \frac{19}{3} \xrightarrow{\times 60} 380 \text{ min}$

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$m(t) = m_0 \times \left(\frac{7}{8}\right)^t \Rightarrow \left(\frac{7}{8}\right)^t = 7^{-1} \xrightarrow[\text{می‌گیریم ۳}]{\text{لگاریتم در مبنای}} t(\log_3 7 - 3\log_3 2) = -\log_3 7$

$\frac{1}{7} m_0$

$\begin{cases} \log_3 2 = \frac{10}{16} \\ \log_3 7 = \frac{10}{6} \end{cases} \Rightarrow t\left(\frac{10}{6} - 3\times\frac{10}{16}\right) = -\frac{10}{6} \to t = 8 \xrightarrow{\times 7} t = 56 \text{ day}$

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$P(t) = P_0 \times \left(\frac{96}{100}\right)^t \Rightarrow \left(\frac{96}{100}\right)^t = \frac{1}{3} \xrightarrow[\text{لگاریتم می‌گیریم}]{\text{از دو طرف}} t(5\log 2 + \log 3 - 2) = -\log 3 \Rightarrow$

$\frac{1}{3} P_0$

$t(1.5 + 0.48 - 2) = -0.48 \to t = 24$

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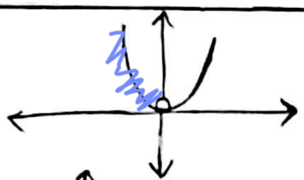
الف) $y = x^{\log_3 9} = x^2$



$D = (0, +\infty)$

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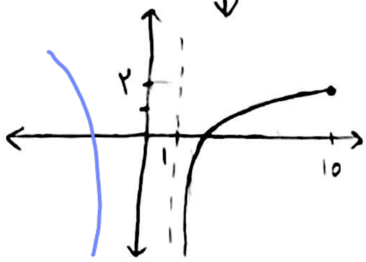
ب) $y = 2\log x$



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