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آروشا ایدی یازدهم دفتر A تکلیف شماره ۲۵

۱- $(0,2) \to 2 = 1 - \log_c^{-b} \to \log_c^{-b} = -1 \to -b = c^{-1} = \frac{1}{c} \to b = \frac{-1}{c}$

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

$\searrow c = \frac{1}{2} , b = -2$ ✓ ق ق

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$(\frac{-3}{2}, 0) \to 0 = 1 - \log_c^{\frac{-3}{2}a - b} \to \log_c^{\frac{-3}{2}a - b} = 1 \to c = \frac{-3}{2}a - b$

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

۲- $(1,0) \to 0 = 1 + c \times 3^{a+b} \to c \times 3^a \times 3^b = -1$

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

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

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

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

۳- $(0,2) \to 2 = c + \log_5^b \to c = 2 - \log_5^b$

$(2.4, 0) \to 0 = c + \log_5^{2.4a+b} \to c = -\log_5^{2.4a+b}$

$\to 2 - \log_5^b = -\log_5^{2.4a+b}$

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

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

۴- $f(x) = \log_4^{(|x^2-2|-x)} \to |x^2-2| - x > 0 \to x > \sqrt{2} \to x^2 - x - 2 > 0 \to$ x: −1, 2 : + − + $\to (2, +\infty)$

$\searrow x < \sqrt{2} \to -x^2 - x + 2 > 0 \to$ x: −2, 1 : − + − $\to (-2, 1)$

$(-\infty, 1)$

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

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$f(x) = 2 + 2^{b-ax}$ $\quad g(x) = -x^2 - 3x + 8$ ‍ ‍ ‍ —۵

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

$f^{-1}(10) = -1 \to f(-1) = 10 \to 2 + 2^{b+a} = 10 \to 2^{b+a} = 8 \to b + a = 3$ $\Big\}$ $2b = 4 \to b = 2$, $a = 1$

$2b - a = 2(2) - 1 = 3$

$x = 1 \to -2 + (\frac{1}{2})^{A+B} = 0 \to (\frac{1}{2})^{A+B} = 2 \to A + B = -1$ ‍ ‍ —۶

$x = 2 \to -2 + (\frac{1}{2})^{2A+B} = 2 \to (\frac{1}{2})^{2A+B} = 4 \to 2A + B = -2$ $\Big\}$ $A = -1$, $B = 0$

$f(3) = -2 + (\frac{1}{2})^{-3} = -2 + 8 = 6$

$P = P_0 \times (\frac{8}{9})^t \to \frac{1}{6} P_0 = P_0 \times (\frac{8}{9})^t \to \frac{1}{6} = (\frac{8}{9})^t$ ‍ ‍ —۷

$\to \log_5 \frac{1}{6} = \log_5 (\frac{8}{9})^t \to -\log_5 6 = t \log \frac{8}{9} \to -(\log_5 3 + \log_5 2) = t(3\log_5 2 - 2\log_5 3)$

$\to -(\frac{10}{14} + \frac{10}{24}) = t(3 \times \frac{10}{24} - 2 \times \frac{10}{14}) \to t = \frac{-(\frac{5}{7} + \frac{5}{12})}{(\frac{5}{4} - \frac{10}{7})} = \frac{-\frac{95}{84}}{-\frac{5}{28}} = \frac{19}{3}$ ساعت $= 380$ دقیقه

$P = P_0 \times (1 - \frac{125}{1000})^t \to \frac{1}{7} P_0 = P_0 \times (\frac{7}{8})^t \to \log_2 \frac{1}{7} = \log_2 (\frac{7}{8})^t$ ‍ ‍ —۸

$\to t = \frac{\log_2 \frac{1}{7}}{\log_2 \frac{7}{8}} = \frac{\log_2 1 - \log_2 7}{\log_2 7 - 3\log_2 2} = \frac{0 - \frac{10}{6}}{\frac{10}{6} - 3 \times \frac{10}{16}} = \frac{-\frac{10}{6}}{-\frac{5}{24}} = \frac{10 \times 24}{6 \times 5} = 8$ هفته

روز $8 \times 7 = 56$

$(\frac{100 - 4}{100})^t = \frac{1}{3} \to (\frac{24}{25})^t = \frac{1}{3} \xrightarrow{\text{معکوس}} (\frac{25}{24})^t = 3$ ‍ ‍ —۹

$\to \log (\frac{25}{24})^t = \log 3 \to t \log \frac{25}{24} = \log 3 \to t = \frac{\log 3}{\log \frac{25}{24}} = \frac{\log 3}{\log 25 - \log 24}$

$\to \frac{\log 3}{2(\log 10 - \log 2) - (\log 3 + 3\log 2)} = \frac{0/48}{2(1 - 0/3) - (0/48 + 0/9)} = \frac{0/48}{0/02} = 24$ روز

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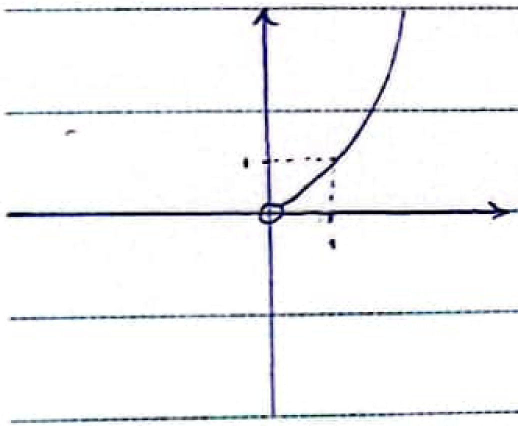
الف) $y = 9^{\log_3 x} = x^{\log_3 9} = x^2 \qquad D = (0, +\infty)$



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ب) $y = \log x^2 \qquad D = \mathbb{R} - \{0\}$