نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۲۵ کلاس .....

۱

$\frac{x=0}{y=2} \rightarrow 2 = 1 - \log_c^{-b} \rightarrow \log_c^{-b} = -1 \rightarrow -b = \frac{1}{c} \rightarrow b = \frac{-1}{c}$

$\frac{x=-1.5}{y=0} \rightarrow 0 = 1 - \log_c^{-1.5a-b} \rightarrow \log_c^{-1.5a-b} = 1 \rightarrow -1.5a - b = c \rightarrow -1.5a = b + c \Rightarrow \boxed{a=1}$

$b+c = -\frac{3}{2} \xrightarrow{b=\frac{-1}{c}} \frac{-1}{c} + c = -\frac{3}{2} \rightarrow c^2 + \frac{3}{2}c - 1 = 0 \rightarrow (c+2)(c-\frac{1}{2}) = 0 \begin{cases} c=-2 \times & [c>a] \\ c=\frac{1}{2} \checkmark \end{cases}$

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

۲

$\frac{x=0}{y=\frac{2}{3}} \rightarrow \frac{2}{3} = 1 + c \times 3^a \rightarrow \frac{-1}{3} = c \times 3^a$

$\frac{x=1}{y=0} \rightarrow 0 = 1 + c \times 3^{a+b} \rightarrow -1 = c \times 3^{a+b}$

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

$f(-1) = 1 + c \times 3^{a-1} = \underbrace{1 + c \times 3^a}_{\frac{2}{3}} \times 3^{-1} = \frac{2}{3} \times \frac{1}{3} = \boxed{\frac{2}{9}}$

۳

$\frac{x=0}{y=2} \rightarrow 2 = c + \log_\omega^b$

$\frac{x=2.4}{y=0} \rightarrow 0 = c + \log_\omega^{2.4a+b}$

$\xrightarrow{\text{تفریق}} 2 = \log_\omega^b - \log_\omega^{2.4a+b} \rightarrow 2 = \log_\omega^{\frac{b}{2.4a+b}}$

$\rightarrow 2 = \frac{b}{2.4a+b}$

$\rightarrow 9a + 2b = b \rightarrow 9a = -2b$

$\rightarrow \frac{a}{b} = \frac{-2}{9} = \boxed{-0.2}$

۴

$|x^2-2| - x > 0 \rightarrow |x^2-2| > x \xrightarrow{(1)} x^2-2 > x \Rightarrow x^2-x-2 > 0$

$\xrightarrow{I} (-\infty,-1) \cup (2,+\infty)$ (−1: +, 2: −, +)

$\xrightarrow{(2)} x^2-2 < -x \rightarrow x^2+x-2 < 0$ (−2: +, 1: −, +) $\xrightarrow{II} (-2,1)$

$I \cup II \rightarrow (-\infty,1) \cup (2,+\infty)$

۵

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

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

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

۶

$n=1 \to y = 1-1 = 0 \Rightarrow f(a_1) = 0 \to 0 = -2 + (\frac{1}{2})^{A+B} \to 2 = (\frac{1}{2})^{A+B} \Rightarrow A+B = -1$

$n=2 \to y = 5-2 = 3 \Rightarrow f(a_2) = 3 \to 3 = -2 + (\frac{1}{2})^{2A+B} \to 5 = (\frac{1}{2})^{2A+B} \Rightarrow 2A+B = -3$

تفریق $\Rightarrow A = -1 \;,\; B = 0 \to f(a_n) = -2 + (\frac{1}{2})^{-a_n}$

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

۷

باقیمانده $\frac{8}{9} \Rightarrow \frac{1}{9} = (\frac{8}{9})^{t} \quad \log_{\frac{8}{9}} - \log_{\frac{8}{9}} = t \log_{\frac{8}{9}} \frac{8}{9}$

$\log_{\frac{8}{9}}^{2} = \frac{1}{\log_{\frac{8}{9}}^{2}} = \frac{5}{12} \;,\; \log_{\frac{8}{9}}^{3} = \frac{1}{\log_{\frac{8}{9}}^{3}} = \frac{5}{7}$ $\Big\}$ $-(\log_{\frac{8}{9}}^{2} + \log_{\frac{8}{9}}^{3}) = t(\log_{\frac{8}{9}}^{8} - \log_{\frac{8}{9}}^{9})$

$\frac{95}{84}$ $\qquad$ $-\frac{5}{28}$

$\to t = \frac{95}{84} \div \frac{5}{28} = \frac{19}{3}$ ساعت

$\to \frac{19}{3} \times 60 = 380$ دقیقه

۸

باقیمانده $\frac{1}{8} = \%12.5 \Rightarrow 25 = 200 \times (\frac{1}{8})^{t} \to \frac{1}{7} = (\frac{1}{8})^{t} \quad \log_{3}$

$\log_{3}^{2} 3 = \log_{3}^{8} \;,\; \log_{3}^{7} = \frac{1}{\log_{3}^{7}} = \frac{5}{3}$ $\qquad$ $\log_{3}^{7} = t \log_{3}^{\frac{1}{2}} \Rightarrow -\log_{3}^{7} = t \log_{3}^{2}$

$= \frac{1}{\log_{3}^{2}} = \frac{15}{8} \Rightarrow -\frac{5}{3} = t(\log_{3}^{7} - \log_{3}^{8}) \to t = 7$ هفته $\Rightarrow 7\pi 7 = 49$ روز

$\frac{-5}{24} = \frac{5}{3} - \frac{15}{8}$

۹

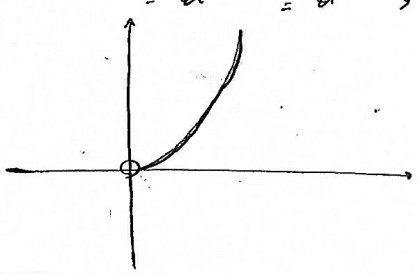
$\log_{\frac{99}{100}} 2 - \log_{\frac{99}{100}} 3 = \log_{\frac{99}{100}} \frac{2}{3} \to \frac{1}{3} = (\frac{99}{100})^{t}$ باقیمانده $\%99$ ماده رنگی

$\to -\log_{\frac{99}{100}} 3 = t(\log_{\frac{99}{100}} 99 - \log_{\frac{99}{100}} 100) \Rightarrow -0.477 = t \times (-0.0044) \Rightarrow t = 108$ روز

$\log_{10} 5^{3} = 3 \log_{10} 5 = 3 \log_{10} 2 + \log_{10} 3 = 0.48 + 0.477 = 0.957$

۱۰

الف) $\log_{3} 9^{10} = \log_{3} 3^{20} = a^{2} \;;\; a > 0$



ب) $\log_{a} 2 = 2 \log_{a} a$