۱۸,۷۵

نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۲ ..... کلاس .....

۱ (۲)

$x=0, y=2 \rightarrow 2 = 1 - f_c^{-b} \rightarrow f_c^{-b} = -1 \rightarrow -b = \frac{1}{c} \rightarrow b = \frac{-1}{c} \rightarrow \frac{-1}{c} + c = \frac{-3}{2} = \frac{c^2-1}{c} = \frac{-3}{2} \rightarrow 2c^2 - 2 = -3c$

$\rightarrow 2c^2 + 3c - 2 = 0 \rightarrow c = -2$ (غ ق ق) ، $c = \frac{1}{2}$ ✓ $\rightarrow b = -2$ ✓ $\rightarrow x=1, y=0 \rightarrow f_{\frac{1}{2}}^{-2a+2} = 1 \rightarrow -2a + 2 = \frac{1}{2} \rightarrow a = \frac{3}{4}$ ✓

$(1 + \frac{1}{2})^{\frac{3}{2}} \times 2 = -4$ ✓

۲ (۲)

$\begin{cases} f(0) = \frac{2}{3} \rightarrow 1 + c \times 3^a = \frac{2}{3} \rightarrow c \times 3^a = -\frac{1}{3} \\ f(1) = 0 \rightarrow 1 + c \times 3^{a+b} = 0 \Rightarrow 1 + c \times 3^a \times 3^b = 0 \xrightarrow{c \times 3^a = -\frac{1}{3}} 1 + (-\frac{1}{3}) \times 3^b \rightarrow b = 1 \end{cases}$ ✓

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

۳ (۲)

$\begin{cases} 2 = c + f_\omega^b \\ 0 = c + f_\omega^{(2, 4\omega+b)} \end{cases} \Rightarrow f_\omega^{2, 4\omega+b} - f_\omega^b = -2 \Rightarrow f_\omega^{\frac{2, 4\omega+b}{b}} = -1 \rightarrow \frac{2, 4\omega+b}{b} = \frac{1}{\omega} \rightarrow \frac{2, 4\omega}{b} = \frac{-2, 4}{\omega}$

$\frac{a}{b} = -\frac{2}{\omega}$ ✓

۴ (۲)

$|x^2 - 2| - x > 0 \rightarrow \begin{cases} x^2 - 2 \geq 0 \rightarrow x \geq \sqrt{2}, x \leq -\sqrt{2} \rightarrow x^2 - 2 - x = 0 \rightarrow x < -1, x > 2 \xrightarrow{\cap} x \leq -\sqrt{2}, x > 2 \rightarrow I \\ x^2 - 2 < 0 \Rightarrow -\sqrt{2} < x < \sqrt{2} \rightarrow -x^2 + 2 - x > 0 \rightarrow -2 < x < 1 \xrightarrow{\cap} -\sqrt{2} < x < 1 \quad II \end{cases}$

$I \cup II \Rightarrow D_f = (-\infty, 1) \cup (2, +\infty)$ ✓

۵ (۲)

$f(1) = g(1) \Rightarrow 2 + 2^{b-a} = 4 \rightarrow 2^{b-a} = 2 \rightarrow b - a = 1$

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

$\left.\begin{matrix} b=2 \checkmark \\ a=1 \checkmark \end{matrix}\right\} \rightarrow f^{-1} = 3$ ✓

۶ (۲)

$x=1 \to y=0 \to A(1,0)$

$x=2 \to y=2 \to B(2,2)$

$\Rightarrow \begin{cases} -2+\left(\frac{1}{2}\right)^{A+B}=0 \Rightarrow \left(\frac{1}{2}\right)^{A+B}=2 \to A+B=-1 \\ -2+\left(\frac{1}{2}\right)^{2A+B}=2 \Rightarrow \left(\frac{1}{2}\right)^{2A+B}=4 \to 2A+B=-2 \end{cases} \Rightarrow A=-1, B=0$

$f(x)=-2+\left(\frac{1}{2}\right)^{-x} \Rightarrow f(3)=-2+\left(\frac{1}{2}\right)^{-3}=-2+8=6$ ✓

۷ (۲)

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

$\to t(\log_{\frac{8}{9}}8-\log_{\frac{8}{9}}9)=-(\log_{\frac{8}{9}}2+\log_{\frac{8}{9}}3) \to t(3\times\frac{\omega}{12}-2\times\frac{\omega}{9})=-(\frac{\omega}{12}+\frac{\omega}{9}) \to t(\frac{9\omega-8\omega}{36})=-(\frac{3\omega+4\omega}{36})$

$\to -\omega t=-\frac{9\omega}{3} \Rightarrow t=\frac{19}{3}h \to \frac{19}{3}\times 60=380\ min$ ✓

۸ (۲)

$m(t)=m_0\left(\frac{7}{8}\right)^{\frac{t}{7}} \Rightarrow \left(\frac{7}{8}\right)^{\frac{t}{7}}=\frac{1}{7} \to \log_{\frac{7}{8}}\left(\frac{7}{8}\right)^{\frac{t}{7}}=\log_{\frac{7}{8}}\frac{1}{7} \to \frac{t}{7}\log_{\frac{7}{8}}\frac{7}{8}=\log_{\frac{7}{8}}\frac{1}{2} \to \frac{t}{7}(\log_{\frac{7}{8}}7-3\log_{\frac{7}{8}}2)=-\log_{\frac{7}{8}}7$

$\to \frac{t}{7}\left(\frac{\omega}{3}-3\times\frac{\omega}{8}\right)=-\frac{\omega}{3} \to \frac{t}{7}\left(\frac{8\omega-9\omega}{24}\right)=-\frac{\omega}{3} \Rightarrow \frac{t}{7}\left(\frac{-\omega}{24}\right)=\frac{-\omega}{3} \Rightarrow \frac{t}{\omega 4}=1 \to t=\omega 4$ ✓

۹ (۱٫۲۵)

$f(t)=A\left(\frac{96}{100}\right)^{t} \Rightarrow \frac{A}{3}=A\left(\frac{96}{100}\right)^{t} \Rightarrow \left(\frac{96}{100}\right)^{t}=\frac{1}{3} \Rightarrow \log_{\frac{96}{100}}\left(\frac{96}{100}\right)^{t}=\log_{\frac{96}{100}}\frac{1}{3} \Rightarrow t(\log 96-\log 100)=-\log 3$

$\to t(\log 2^{5}+\log 3-2)=-\log 3 \to t(\underbrace{5\log 2}_{1,5}+0,48-2)=-0,48 \to t(1,98\omega-2)=-0,48 \to$

$-0,02t=-0,48$

$t=24$

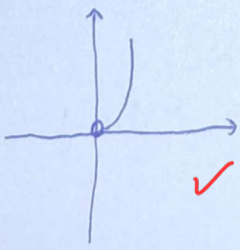
$t=\frac{-0,3}{-0,005\omega}=60$

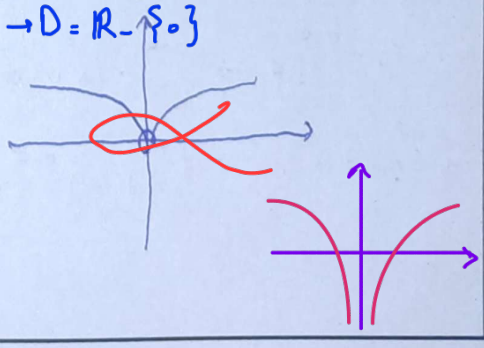
۱۰ (۱)

$y=9-\log_3 x \to x>0$

$\log_3 x=2 \Rightarrow x=3^2$

$\log x \to D=\mathbb{R}-\{0\}$





$(0,94)^n A_0 = \frac{1}{3} A_0 \rightarrow (0,94)^n = \frac{1}{3}$ ۹-

$\xrightarrow{\log} n \log 0,94 = -\log 3 \rightarrow n = \frac{-\log 3}{\log 94 - 2}$

$n = \frac{\log 3}{2 - \log(2^5 \times 3)} = \frac{\log 3}{2 - (5\log 2 + \log 3)} = \frac{0,48}{2 - (5(0,3) + 0,48)}$

$= \boxed{24}$