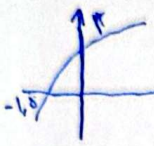


$y = 1 - 1.g_c^{(ax-b)} \rightarrow 1 - 1.g_c^{-b} = 2 \rightarrow 1.g_c^{-b} = -1 \rightarrow \frac{1}{c} = -b$ (۲) (۱)

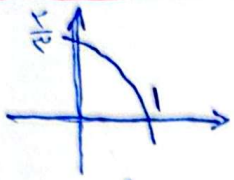
$b + c = -\frac{3}{4}$ (۲)

$(a+c)b = (1+\frac{1}{2})x - 2 \Rightarrow -3$ ✓ صواب

$\rightarrow 1.g^{-1,5a+2}_{1/2} = 1 \rightarrow \frac{1}{2} = -1,5a+2 \rightarrow a = 1$ ✓

$\rightarrow b + c = -\frac{3}{4} \Rightarrow -\frac{1}{c} + c = -\frac{3}{2} \Rightarrow -1 + c^2 = -\frac{3}{2}c \Rightarrow c^2 + \frac{3}{2}c - 1 = 0$

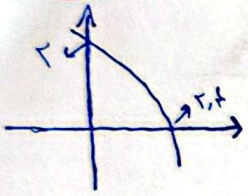
$\Rightarrow$ غ ق $c = -2$ ✓ ق ق $c = \frac{1}{2}$ $\Rightarrow -b = \frac{1}{2} \Rightarrow b = -2$ ✓



$f(0) = 1 + c \times 2^a = \frac{3}{4} \Rightarrow c \times 2^a = -\frac{1}{4}$ (۲) (۲)

$f(1) = 1 + c \times 2^{a+b} = 0 \Rightarrow 1 + c \times 2^a \times 2^b = 0$ $\Rightarrow 2^b = 2 \Rightarrow b = 1$ ✓

$\rightarrow f(-1) = ? \Rightarrow 1 + c \times 2^{a-1} = 1 + c \times 2^a \times 2^{-1} = 1 - \frac{1}{4} \times \frac{1}{2} = 1 - \frac{1}{8} = \frac{7}{8}$ ✓



$2 = c + 1.g_5^b$

$0 = c + 1.g_5^{(2,4a+b)}$ $\Rightarrow 1.g_5^{(2,4a+b)} - 1.g_5^b = -2$ (۲) (۳)

$\rightarrow 1.g_5^{\frac{2,4a+b}{b}} = -2 \Rightarrow \frac{2,4a+b}{b} = \frac{1}{25} \Rightarrow 2,4a = -\frac{24}{25}b \Rightarrow \frac{a}{b} = -\frac{2}{5}$

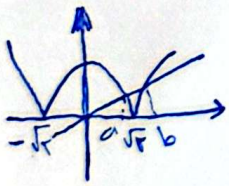
$\Rightarrow \frac{a}{5} = ? = -\frac{2}{5} = -0,4$ ✓

$f(a) = 1.g_4^{(|a^2-2|-a)}$ (۲) (۴)

$a^2 - 2 = a \Rightarrow a^2 - a - 2 = 0 \Leftarrow \begin{matrix} a=-1 \\ a=2 \end{matrix} \Rightarrow b = 2$

$-a^2 + 2 = a \Rightarrow a^2 + a - 2 = 0 \Leftarrow \begin{matrix} a=1 \\ a=-2 \end{matrix} \Rightarrow a = 1$

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



$\Rightarrow (-\infty, a) \cup (b, +\infty) \Rightarrow a \Rightarrow 0 < a < \sqrt{2}, \; b > \sqrt{2}$

$f(a) = 2 + 2^{b-aa}$ $\Rightarrow f(1) = g(1) \Rightarrow 2 + 2^{b-a} = 4 \Rightarrow 2^{b-a} = 2 \Rightarrow b - a = 1$ (۲) (۵)

$g(a) = -a^2 - 3a + 8$

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

$2f(2) - 1 = 5$ ✓

$\Rightarrow \begin{matrix} b+a=3 \\ b-a=1 \end{matrix} \Rightarrow \begin{matrix} b=2 \\ a=1 \end{matrix}$ ✓

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

$y = 2x^2 - x \Rightarrow y = 2x^2 - x \xrightarrow{x=1} y = 0 \rightarrow A(1,0)$

$f(x) = ?$ $\quad y = 2x^2 - x \xrightarrow{x=2} y = 2 \Rightarrow B(2,2)$

$\Rightarrow \begin{cases} -2 + \frac{1}{2}A + B = 0 \Rightarrow A + B = -1 \\ -2 + \frac{1}{2}2A + B = 2 \Rightarrow 2A + B = -2 \end{cases} \Rightarrow A = -1,\ B = 0$ ✓

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

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

(6) (1,5)

$m(t) = m\left(\frac{5}{9}\right)^t = \frac{1}{6}m \Rightarrow \left(\frac{5}{9}\right)^t = \frac{1}{6} \Rightarrow \frac{19}{2} \times 60 = 570\ min$ ✓

(7) (2)

$\Rightarrow \log_5 \left(\frac{5}{9}\right)^t = \log_5 \frac{1}{6} \Rightarrow t \log_5 \left(\frac{5}{9}\right) = -\log_5 6$

$\log_5 \frac{5}{2} = \frac{15}{10} = \frac{3}{2} \rightarrow \log_5 2 = \frac{3}{5} \Rightarrow t \log_5 \left(\frac{5}{9}\right) = -\log_5 6 \rightarrow t(\log_5 5 - \log_5 9) = -(\log_5 2 + \log_5 3)$

$\log_5 \frac{5}{3} = \frac{15}{10} = \frac{3}{2} \rightarrow \log_5 3 = \frac{3}{5}$ $\quad t\left(\frac{5}{2} - \frac{6}{5}\right) = -\left(\frac{3}{5} + \frac{6}{5}\right) \Rightarrow t = \frac{19}{3}$ ✓

$m(t) = m\left(\frac{3}{8}\right)^{\frac{t}{7}} \Rightarrow \frac{1}{7}m = m\left(\frac{3}{8}\right)^{\frac{t}{7}} \Rightarrow \left(\frac{3}{8}\right)^{\frac{t}{7}} = \frac{1}{7}$

(8) (2)

$\log_3 \left(\frac{3}{8}\right)^{\frac{t}{7}} = \log_3 \left(\frac{1}{7}\right) = \frac{t}{7}\log_3 \frac{3}{8} \Rightarrow \frac{t}{7}(\log_3 3 - \log_3 8) = -\log_3 7$

$\log_3 \frac{3}{7} = 0.14 = \log_3 3^{\frac{1}{5}} = \frac{1}{5}$

$\log_3 2 = 1.4 = \log_3 3^{\frac{3}{5}} = \frac{3}{5}$

$\Rightarrow \frac{t}{7}\left(-\frac{3}{5}\right) = -\frac{3}{2} \Rightarrow \frac{t}{35} = 1 \Rightarrow \boxed{t = 35}$ ✓

$f(t) = A\left(\frac{24}{100}\right)^t = \frac{A}{2} \Rightarrow \left(\frac{6}{25}\right)^t = \frac{1}{2}$

(9) (2)

$\Rightarrow \log\left(\frac{6}{25}\right)^t = \log\frac{1}{2} \Rightarrow t(\log 6 - \log 25) = -\log 2 \Rightarrow \log 2^5 + \log 3^t - 2\log 5 = -\log 2$

$\rightarrow$ [illegible] $\quad t(5\log 2 + \log 3 - 2\log 5) = \log 2 + 2\log 5$

$\rightarrow t(1.5 + 0.47 - 2) = 0.47 \Rightarrow -0.03t = 0.47 \Rightarrow t = -15.6$ ✓

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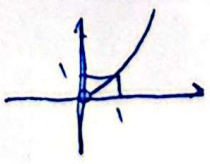
(10) (2)

الف) $y = \log_3 x^2$

$\forall x \log_3 x^2 = \boxed{x^2}$

$\Rightarrow (0, +\infty)$



ب) $y = 2\log_3 x$

$y = 2\log_3 x$

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