Subject: یازدهم ریاضی B

Year. Month. Date. ( )

Name. خانه موسوی — تکلیف شماره ۲۵

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

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

$c = \frac{1}{2} ,\ b = -2$ ✓

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

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

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

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

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

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

③ $(0,2) \to 2 = c + \log_5^b \to c = 2 - \log_5^b$

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

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

$\Rightarrow 2 = \log_5^{\frac{b}{2.4a+b}} \to 25 = \dfrac{b}{2.4a+b} \Rightarrow 60a + 25b = b \to 60a = -24b \to \dfrac{a}{b} = -\dfrac{24}{60}$

$\boxed{-\frac{2}{5}}$

④ $f(x) = \log_4(|x^2-2| - x) \to |x^2-2| - x > 0 \to x > \sqrt{2} \to x^2 - x - 2 > 0$

$\to x < \sqrt{2} \to -x^2 - x + 2 > 0$

x		-1		2	
	$+$		$-$		$+$

$x^2 - x - 2 > 0$ ①

x		-2		1	
	$-$		$+$		$-$

$-x^2 - x + 2 > 0$ ②

$\to$ ①∪② $\to \boxed{(-\infty, 1) \cup (2, +\infty) = D_f}$

⑤ $f(x) = 2 + 2^{b-ax}$ $\qquad g(x) = x^2 - 6x + 8$

$2 + 2^{b-a} = -1 - 3 + 8 \to 2 + 2^{b-a} = 4 \to 2^{b-a} = 2 \to b - a = 1$

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

$2b = 4 \to b = 2$

$b = 2 ,\ a = 1$

$2b - a = 2(2) - 1 = \boxed{3}$

(6)

$x=1 \rightarrow -2 + \left(\frac{1}{2}\right)^{A+B} = 0 \rightarrow \left(\frac{1}{2}\right)^{A+B} = 2 \rightarrow A+B=-1$

$x=2 \rightarrow -2 + \left(\frac{1}{2}\right)^{2A+B} = 2 \rightarrow \left(\frac{1}{2}\right)^{2A+B} = +4 \rightarrow 2A+B=-2$

$\left.\right\} A=-1 ,\ B=0$

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

(7)

$P = P_0 \times \left(\frac{8}{9}\right)^t \rightarrow \frac{1}{4}P_0 = P_0 \times \left(\frac{8}{9}\right)^t \rightarrow \frac{1}{4} = \left(\frac{8}{9}\right)^t$

$\log_5^{1/4} = \log_5^{(8/9)^t} \rightarrow -\log_5^4 = t\log_5^{8/9} \rightarrow \left(-\left(\log_5^2 + \log_5^2\right)\right) = t\left(3\log_5^2 - 2\log_5^3\right)$

$-\left(\frac{10}{14} + \frac{10}{24}\right) = t\left(3\times\frac{10}{24} - 2\times\frac{10}{14}\right) \rightarrow t = \frac{-\left(\frac{5}{7}+\frac{5}{12}\right)}{\left(\frac{5}{4}-\frac{10}{7}\right)} = \frac{-\frac{95}{84}}{-\frac{5}{28}} = \frac{19}{3} = 380\ \text{min}$

ساعت

(8)

$P = P_0 \times \left(1 - \frac{125}{1000}\right)^t \rightarrow \frac{1}{7}P_0 = P_0 \times \left(\frac{7}{8}\right)^t \rightarrow \log_3^{1/7} = \log_3^{(7/8)^t}$

$\rightarrow t = \frac{\log_3^{1/7}}{\log_3^{7/8}} = \frac{\log_3^1 - \log_3^7}{\log_3^7 - 3\log_3^2} = \frac{0 - \frac{10}{6}}{\frac{10}{6} - 3\times\frac{10}{14}} = \frac{-\frac{10}{6}}{-\frac{5}{24}} = \frac{10\times 24}{6\times 5} = 8$ هفته $= 56$ روز

(9)

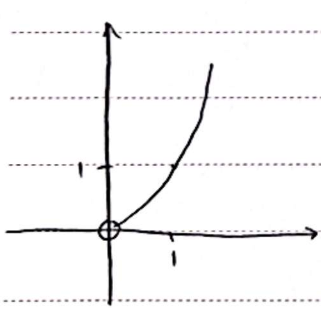
$\left(\frac{100-4}{100}\right)^t = \frac{1}{3} \rightarrow \left(\frac{24}{25}\right)^t = \frac{1}{3} \rightarrow \left(\frac{25}{24}\right)^t = 3$

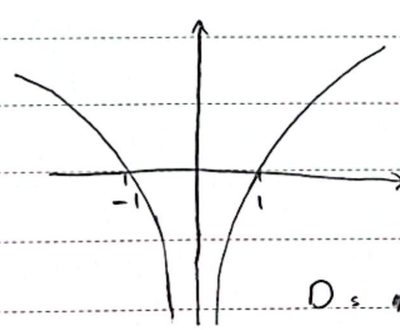
$\log\left(\frac{25}{24}\right)^t = \log 3 \rightarrow t\log\frac{25}{24} = \log 3 \rightarrow t = \frac{\log 3}{\log\frac{25}{24}} = \frac{\log 3}{\log 25 - \log 24}$

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

(10)

الف) $y = 9^{\log_3^x} = x^{\log_3^9} = x^2$ ب) $y = \log x^2$





$D_f = (0, +\infty)$

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