۲۰

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

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

$c = 1/2 , b = -2$ ✓

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

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

د

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

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

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

د

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

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

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

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

د

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

$\boxed{-2/5}$

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

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

د

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

$x^2 - x - 2 > 0$ ①

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

$-x^2 - x + 2 > 0$ ②

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

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

د

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

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

$\Big\} 2b = 4 \to b = 2$

$b = 2 , a = 1$

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

Subject:

Year. Month. Date. ( ) Name.

۶)

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

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

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

۷)

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

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

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

۸)

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

$\rightarrow t=\dfrac{\log_3^{1/7}}{\log_3^{7/8}}=\dfrac{\log_3^1-\log_3^7}{\log_3^7-3\log_3^2}=\dfrac{0-\frac{10}{6}}{\frac{10}{6}-3\times\frac{10}{16}}=\dfrac{\frac{-10}{6}}{\frac{-5}{24}}=\dfrac{10\times 24}{6\times 5}=8$ هفته $=56$ روز

۹)

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

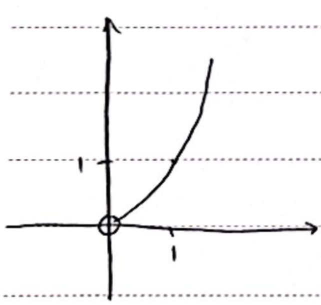
$\log\left(\frac{25}{24}\right)^t=\log 3 \rightarrow t\log\frac{25}{24}=\log 3 \rightarrow t=\dfrac{\log 3}{\log\frac{25}{24}}=\dfrac{\log 3}{\log 25-\log 24}$

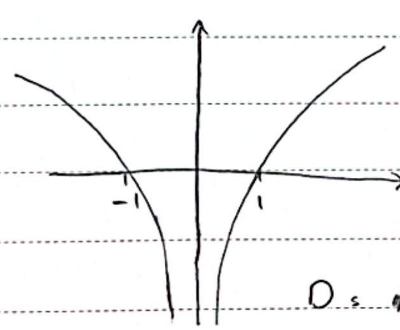
$\dfrac{\log 3}{2(\log 10-\log 2)-(\log 3+3\log 2)}=\dfrac{0/48}{2(1-0/3)-(0/48+0/9)}=\dfrac{0/48}{0/02}=24$ روز

۱۰)

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

ب) $y=\log x^2$





$D_f=(0,+\infty)$

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

TOPCO