Subject جمعبندی تکلیف ۲۵

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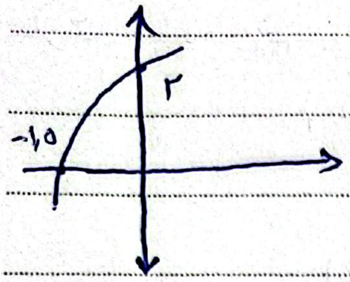


$\left|\begin{matrix}0\\2\end{matrix}\right. \to 1-\log_c^{-b} = 2 \Rightarrow \log_c^{-b} = -1 \quad -b = c^{-1}$

$\left|\begin{matrix}-\frac{3}{2}\\0\end{matrix}\right. \to 1-\log_c^{-\frac{3}{2}a-b} = 0 \Rightarrow -\frac{3}{2}a-b = c$

$b+c = -\frac{3}{2} \to -\frac{1}{c}+c = -\frac{3}{2}$ $\quad -\frac{3}{2}a = \underbrace{b+c}_{-\frac{3}{2}} \to \boxed{a=1}$ ✓

$\frac{c^2-1}{c} = -\frac{3}{2}$

$2c^2+3c-2=0 \to \boxed{c=\frac{1}{2}}$ ✓ $\quad c=-2$ غ ق ق ×

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

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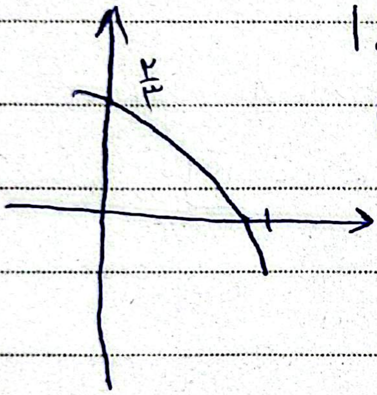


$\left|\begin{matrix}1\\0\end{matrix}\right. \Rightarrow 1+c\times 3^{a+b} = 0 \to c\times 3^{a+b} = -1$

$\left|\begin{matrix}0\\\frac{2}{3}\end{matrix}\right. \Rightarrow 1+c\times 3^{a} = \frac{2}{3} \Rightarrow c\times 3^{a} = -\frac{1}{3} \quad \to 3^b = 3$

$b=1$

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

$f(-1) = 1-\frac{1}{3}\times\frac{1}{3} = \boxed{\frac{8}{9}}$

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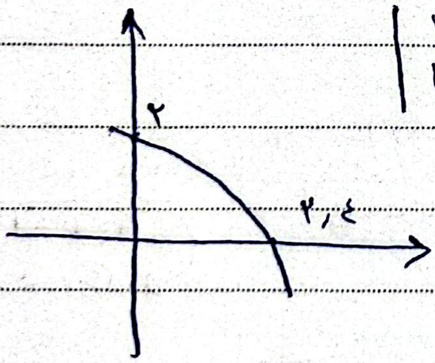


$\left.\begin{matrix}\left|\begin{matrix}0\\2\end{matrix}\right. \to c+\log_5^{b} = 2 \\ \left|\begin{matrix}2.4\\0\end{matrix}\right. \to c+\log_5^{2.4a+b} = 0\end{matrix}\right\} \to \log_5^{b} - \log_5^{2.4a+b} = 2$

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

$\frac{a}{b} = -\frac{24}{60} \Rightarrow \boxed{-\frac{2}{5}}$

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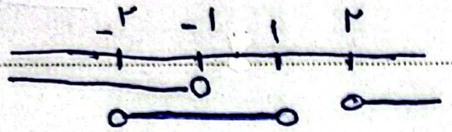
$|x^2-2|-x>0$

$|x^2-2|>x$

$x^2-2>x \rightarrow x^2-x-2>0$ $\quad \begin{array}{ccccc} & -1 & & 2 & \\ + & & - & & + \end{array}$

$x^2-2<-x \rightarrow x^2+x-2<0$ $\quad \begin{array}{ccccc} & -2 & & 1 & \\ + & & - & & + \end{array}$



$D_f=(-\infty,1)\cup(2,+\infty)$

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

$b-a=1$

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

$\begin{cases} b+a=3 \\ b-a=1 \end{cases} \rightarrow 2b=4 \quad b=2 \quad a=1$

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

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$x^2-x,\ x=1 \rightarrow 1-1=0 \quad (1,0)$

$\rightarrow x=2 \rightarrow 4-2=2 \quad (2,2)$

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

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

$\begin{cases} -A-B=+1 \\ 2A+B=-2 \end{cases}$

$A=-1$

$B=0$

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

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$$\left(\log_2 5 \simeq 2.4 \,,\ \log_3 5 \simeq 1.4\right)$$

$$m = m_0 \times \left(\frac{8}{9}\right)^t$$

$$\frac{1}{6} m_0 = m_0 \left(\frac{8}{9}\right)^t \Rightarrow \frac{1}{6} = \left(\frac{8}{9}\right)^t \qquad \log_5 \frac{1}{6} = \log_5 \left(\frac{8}{9}\right)^t$$

$$\log_5 1 - \log_5 6 \to t\left(\log_5 8 - \log_5 9\right) \Rightarrow -\left(\log_5 3 + \log_5 2\right) = t\left(3\log_5 2 + 2\log_5 3\right)$$

$$\log_5 3 = \frac{1}{\log_3 5} = \frac{1}{1.4} \Rightarrow \frac{5}{7} \qquad -\left(\frac{5}{7} + \frac{5}{12}\right) = t\left(3 \times \frac{5}{12} + 2 \times \frac{5}{7}\right)$$

$$\log_5 2 = \frac{1}{\log_2 5} = \frac{1}{2.4} = \frac{5}{12} \qquad t = \frac{19}{3} \to \frac{19}{3} \times 60 \Rightarrow \boxed{380\ min}$$

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$$\left(\log_2 3 \simeq 1.6 \,,\ \log_7 3 \simeq 0.6\right)$$

$$m = m_0 \times \left(\frac{7}{8}\right)^t$$

$$\frac{1}{7} m_0 = m_0 \times \left(\frac{7}{8}\right)^t \Rightarrow \frac{1}{7} = \left(\frac{7}{8}\right)^t \to \log_3 \frac{1}{7} = \log_3 \left(\frac{7}{8}\right)^t \Rightarrow -\log_3 7 = t\left(\log_3 7 - \log_3 8\right)$$

$$\log_3 7 = \frac{1}{\log_7 3} = \frac{1}{0.6} = \frac{10}{6} \qquad -\frac{10}{6} = t\left(\frac{10}{6} - \frac{15}{8}\right)$$

$$\log_3 8 = 3\log_3 2 \to \frac{3}{\log_2 3} \Rightarrow \frac{3}{1.6} \Rightarrow \frac{15}{8} \qquad t = 8$$

$$t = 8 \times 7 = \boxed{56\ day}$$

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$$A = A_0 \times \left(\frac{96}{100}\right)^n \qquad \left(\log 2 \simeq 0.3 \,,\ \log 3 \simeq 0.48\right)$$

$$\frac{1}{3} A_0 = A_0 \times \left(\frac{96}{100}\right)^n \Rightarrow \frac{1}{3} = \left(\frac{96}{100}\right)^n \to \log \frac{1}{3} = \log\left(\frac{96}{100}\right)^n \to -\log 3 = n \log \frac{96}{100}$$

$$-\log 3 = n\left(5\log 2 + \log 3 - \log 100\right) \to -0.48 = n\left(5 \times 0.3 + 0.48 - 2\right)$$

$$n = \frac{-0.48}{-0.02} \Rightarrow \boxed{24}$$

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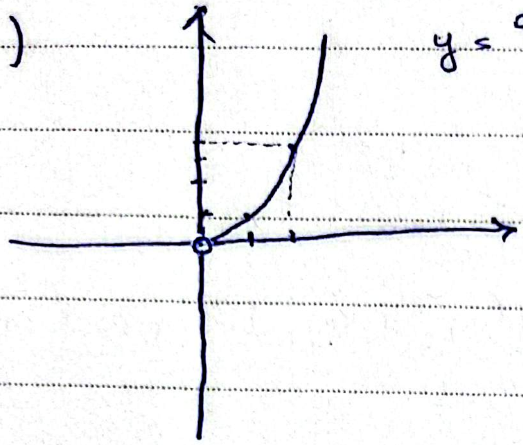
الف) $y = 9^{\log_3 x} \to x^{\log_3 9} \Rightarrow \boxed{x^2}$

$x>0 \to D_f = (0,+\infty)$



ب) $y = \log x^2$

| | | | | | |
|---|---|---|---|---|---|
| $-10$ | $10$ | $-1$ | $+1$ | $-\sqrt{10}$ | $+\sqrt{10}$ |
| $2$ | $2$ | $0$ | $0$ | $1$ | $1$ |