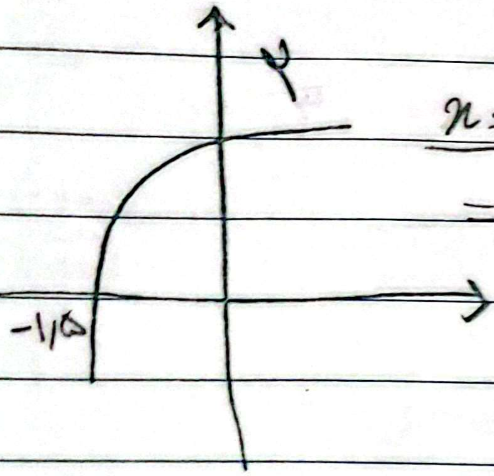
Date

یازدهم دفتر B آقای کریمی

Subject تکلیف ۲۵

①



$b+c=-\frac{3}{2}$

$x=-1/5 \rightarrow 1-\log_c^{-1/5a-b}=0$

$\Rightarrow \log_c^{-1/5a-b}=1 \Rightarrow c=-\frac{3a}{2}-b$

$\frac{1}{2}=-\frac{3a}{2}+2 \Rightarrow a=+1$

$x=0 \rightarrow 1-\log_c^{-b}=2$

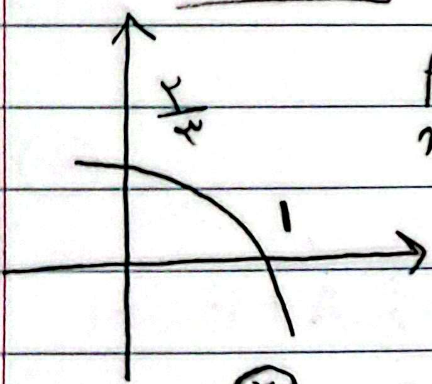
$\log_c^{-b}=-1 \Rightarrow \frac{1}{c}=-b$ ①

$b+c=-\frac{3}{2} \Rightarrow \frac{b^2-1}{b}=\frac{-3}{2}$, $c=-\frac{1}{b}$

$\Rightarrow 2b^2-2=-3b \rightarrow 2b^2+3b-2=0$ $\begin{cases} b=-2 \\ b=\frac{1}{2} \text{ غ ق ق} \end{cases}$

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

②



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

$x=1 \rightarrow 1+c\times 3^{a+b}=0$ $c\times 3^{a+b}=-1$ ①

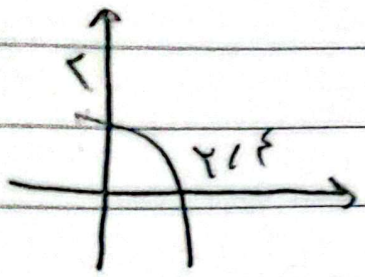
$x=0 \rightarrow \frac{2}{3}=1+c\times 3^a \rightarrow c\times 3^a=\frac{-1}{3}$ ②

$\rightarrow \frac{②}{①} \rightarrow \frac{c\times 3^a}{c\times 3^{a+b}}=\frac{-\frac{1}{3}}{-1}=\frac{1}{3}$

$3^{-b}=3^{-1} \Rightarrow b=1$

$f(-1)=1+c\times 3^{a-1}=1+c\times 3^a\times\frac{1}{3} \rightarrow 1+(-\frac{1}{3})\times\frac{1}{3}=\frac{5}{9}$

(۳)



$y = c + \log_a^{(ax+b)}$

$x=0 \Rightarrow 2 = c + \log_a^b \Rightarrow c = 2 - \log_a^b$

$x = 2/4 \Rightarrow c + \log_a^{2/4a+b} = 0 \Rightarrow c = -\log_a^{2/4a+b}$

$2 - \log_a^b = \log_a^{2/4a+b} \Rightarrow 2 = \log_a^{\frac{b}{2/4a+b}}$

$\Rightarrow 2a = \frac{b}{2/4a+b} \quad 4a + 2ab = b$

$4a = -24b \Rightarrow \frac{a}{b} = \frac{-24}{4} = \frac{-12}{2}$

(۵)

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

$\begin{cases} x^2-2-x>0 & \frac{-1 \quad 2}{+|-|+} \rightarrow (-\infty,-1) \cup (2,+\infty) \\ -x^2+2-x>0 & \frac{-2 \quad 1}{-|+|-} \rightarrow (-2,+1) \end{cases}$

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

(۹)

$f(x) = 2 + 2^{b-ax} \qquad g(x) = -x^2 - 2x + 1$

$x=1 \Rightarrow 2 + 2^{b-a} = 4 \Rightarrow 2^{b-a} = 2 \rightarrow b-a=1$

$x=-1 \Rightarrow 2 + 2^{b+a} = 10 \Rightarrow 2^{b+a} = 8 \Rightarrow b+a=3$

$2b-a = 2(2)-1 = 3$

$b=2, a=1$

$f(n) = -2 + \left(\frac{1}{2}\right)^{An+B}$ $\quad y = n^2 - n$ (٤)

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

$\Rightarrow A+B = -1$

$n=3 \rightarrow -2 + \left(\frac{1}{2}\right)^{3A+B} = 2 \Rightarrow \left(\frac{1}{2}\right)^{3A+B} = 4$ $\quad 3A+B = -2$

$f(0) \rightarrow -2 + \left(\frac{1}{2}\right)^{3(-1)} = -2 + 8 = 6$ $\quad A = -1 \; , B = 0$

$P = P_0 \times \left(\frac{8}{9}\right)^t \rightarrow \frac{1}{2} P_0 = P_0 \left(\frac{8}{9}\right)^t \rightarrow \frac{1}{2} = \left(\frac{8}{9}\right)^t$ (٧)

$\rightarrow \log_9 \frac{1}{2} = \log_9 \left(\frac{8}{9}\right)^t \Rightarrow -\log_9 2 = t \log_9 \frac{8}{9}$

$-(\log_9 2 + \log_9 5) = t\left(3\log_9 2 - 2\log_9 3\right)$

$-\left(\frac{10}{24} + \frac{10}{14}\right) = t\left(\frac{3 \times 10}{24} - \frac{2 \times 10}{14}\right)$

$-\left(\frac{5}{12} + \frac{5}{7}\right) = t\left(\frac{5}{4} - \frac{10}{7}\right)$

$-\frac{95}{12 \times 7} = t\left(\frac{35 - 40}{4 \times 7}\right)$

$\Rightarrow t = \frac{\frac{-95}{12 \times 7}}{\frac{-5}{4}} = \frac{11}{\frac{3}{10}} = 380 \text{ min}$

(٨)

$P = P_0 \times \left(1 - \frac{12.5}{100}\right)^t \rightarrow \frac{1}{8} P_0 = P_0 \times \left(\frac{7}{8}\right)^t \rightarrow \log_3 \frac{1}{8} = \log_3 \left(\frac{7}{8}\right)^t$

$\rightarrow t = \frac{\log_3 \frac{1}{8}}{\log_3 \frac{7}{8}} = \frac{\log_3 1 - \log_3 8}{\log_3 7 - \log_3 8} = \frac{0 - \frac{15}{8}}{\frac{15}{8} - \frac{24}{8}} = 8$ هفته

$8 \times 7 = 56$ روز

۹

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

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

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

$$= \frac{\log 3}{2\log 5 - (3\log 2 + \log 3)} = \frac{\log 3}{2(1-\log 2) - (3\log 2 + \log 3)}$$

$$= \frac{\log 3}{2 - 5\log 2 - \log 3} = \frac{0.48}{2 - 1.505 - 0.48} = \frac{0.48}{0.015} = 32$$

بعد از ۳۲ سال

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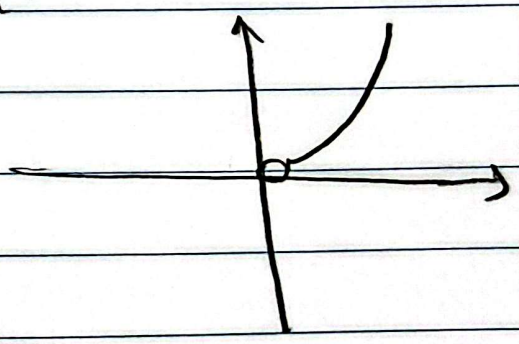
الف) $y = \log_{\frac{1}{2}} x = \log_{2^{-1}} x = -\log_2 x$

$x > 0 \Leftarrow D = (0, +\infty)$



ب) $y = \log x^2 \rightarrow D = \mathbb{R} - \{0\}$