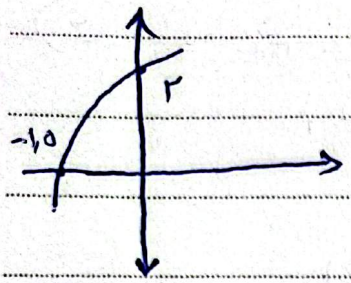
Subject محمد مختاری

Date : Year: Month: Day:

تکلیف ۲۵ — ۲۰



۱) $\begin{matrix}0\\2\end{matrix} \to 1-\log_c^{-b}=2 \Rightarrow \log_c^{-b}=-1 \quad -b=c^{-1}$

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

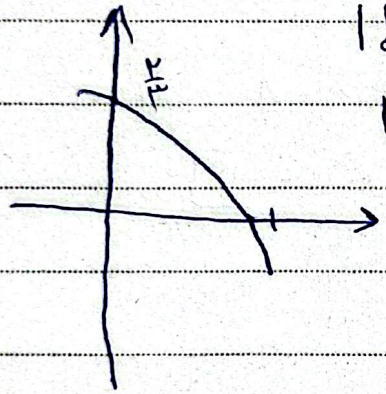
۲) $b+c=-\frac{3}{2} \to -\frac{1}{c}+c=-\frac{3}{2} \qquad -\frac{3}{2}a=\underbrace{b+c}_{-\frac{3}{2}} \to \boxed{a=1}$ ✓

$\frac{c^2-1}{c}=-\frac{3}{4}$

$\boxed{c=\frac{1}{2}}$ ✓

$2c^2+3c-2=0 \to c=-2$ قبول نیست ×

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



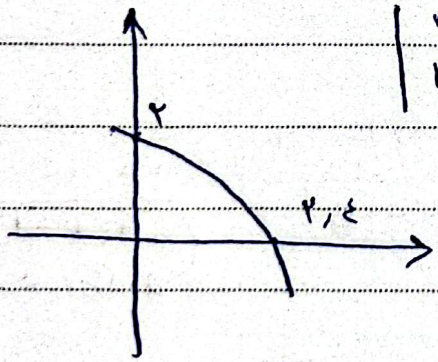
۳) $\begin{matrix}1\\0\end{matrix} \Rightarrow 1+c\times 3^{a+b}=0 \to c\times 3^{a+b}=-1$

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

۴) $b=1$

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

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



۵) $\begin{matrix}0\\2\end{matrix} \to c+\log_5^b=2$

$\begin{matrix}2{,}4\\0\end{matrix} \to c+\log_5^{2{,}4a+b}=0$ $\Big\} \to \log_5^b-\log_5^{2{,}4a+b}=2$

۶) $\frac{b}{2{,}4a+b}=25 \to b=60a+25b \Rightarrow 24b=60a$

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

Subject

Date : Year: Month: Day:

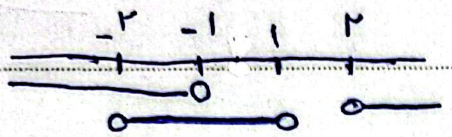
(۴)

$|x^۲-۲|-x>۰$

$|x^۲-۲|>x$

$x^۲-۲>x \to x^۲-x-۲>۰$ (sign chart: -۱, ۲: $+ \; - \; +$)

$x^۲-۲<-x \to x^۲+x-۲<۰$ (sign chart: -۲, ۱: $+ \; - \; +$)



$D_f=(-\infty,۱)\cup(۲,+\infty)$

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(۵)

$۲+۲^{b-a}=-۱-۳+۸ \Rightarrow ۲^{b-a}=۲$

$b-a=۱$

$f^{-۱}(۱۰)=-۱ \to (-۱,۱۰) \to ۲+۲^{b+a}=۱۰ \to ۲^{b+a}=۸ \quad b+a=۳$

$\begin{cases} b+a=۳ \\ b-a=۱ \end{cases} \to ۲b=۴ \quad b=۲ \quad a=۱ \qquad ۲b-a=۴-۱ \Rightarrow \boxed{۳}$

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(۶)

$x^۲-x \to x=۱ \to ۱-۱=۰ \quad (۱,۰)$

$\to x=۲ \to ۴-۲=۲ \quad (۲,۲)$

$(۱,۰) \to -۲+(\frac{۱}{۲})^{A+B}=۰ \to (\frac{۱}{۲})^{A+B}=۲ \to (A+B=-۱)$

$(۲,۲) \to -۲+(\frac{۱}{۲})^{۲A+B}=۲ \to (\frac{۱}{۲})^{۲A+B}=۴ \to ۲A+B=-۲$

$\begin{cases} -A-B=+۱ \\ ۲A+B=-۲ \end{cases} \Rightarrow A=-۱, \quad B=۰$

$f(x)=-۲+(\frac{۱}{۲})^{-x} \Rightarrow f(۳)=-۲+(\frac{۱}{۲})^{-۳}=-۲+۸=\boxed{۶}$

Subject

Date : Year: Month: Day:

$(\log \frac{5}{2} \simeq 2,4 \ , \ \log \frac{5}{3} \simeq 1,4)$ (۷)

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

$\frac{1}{4} m_0 = m_0 (\frac{8}{9})^t \Rightarrow \frac{1}{4} = (\frac{8}{9})^t \quad \log \frac{1}{4} = \log (\frac{8}{9})^t$

$\log 1 - \log 2^2 = t(\log 8 - \log 9) \Rightarrow -(\log 5^3 + \log 5^2) = t(3\log 2^2 + 2\log 3^2)$

$\log 3^3 = \frac{1}{\log \frac{5}{3}} = \frac{1}{1,4} \Rightarrow \frac{5}{7}$ $\quad -(\frac{5}{7} + \frac{5}{12}) = t(3 \times \frac{5}{12} + 2 \times \frac{5}{7})$

$\log 2^2 = \frac{1}{\log 5^2} = \frac{1}{2,4} = \frac{5}{12}$ $\quad t = \frac{19}{3} \rightarrow \frac{19}{3} \times 40 = 380 \ min$

$(\log 2^3 \simeq 1,4 \ , \ \log 7^3 \simeq 0,4)$ (۸)

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

$\frac{1}{7} m_0 = m_0 \times (\frac{7}{8})^t \Rightarrow \frac{1}{7} = (\frac{7}{8})^t \rightarrow \log \frac{1}{3} = \log (\frac{7}{8})^t \Rightarrow -\log 3^7 =$

$\log 3^7 = \frac{1}{\log 7^3} = \frac{1}{0,4} = \frac{10}{4}$ $\quad -\frac{10}{4} = t(\frac{10}{4} - \frac{15}{8})$

$\log 3^8 = 3\log 2^3 \rightarrow \frac{3}{\log 2^3} = \frac{3}{1,4} = \frac{15}{8}$ $\quad t = 8 \times 7 = 56 \ day$

$A = A_0 \times (\frac{94}{100})^n$ $\quad (\log 2 \simeq 0,3 \ , \ \log 3 \simeq 0,48)$ (۹)

$\frac{1}{3} A_0 = A_0 \times (\frac{94}{100})^n \rightarrow \frac{1}{3} = (\frac{94}{100})^n \rightarrow \log \frac{1}{3} = \log (\frac{94}{100})^n \rightarrow -\log 3 = n \log \frac{94}{100}$

$-\log 3 = n(5\log 2 + \log 47 - \log 100) \rightarrow -0,48 = n(5 \times 0,3 + 0,48 - 2)$

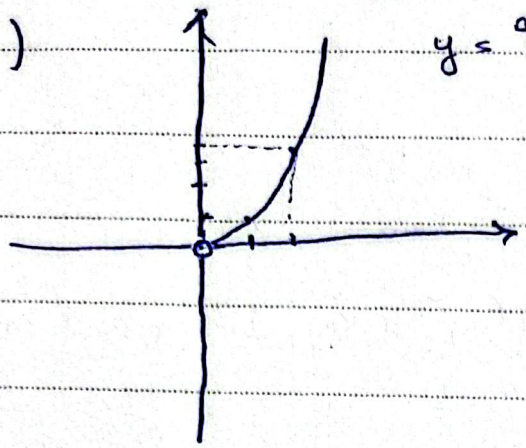
$n = \frac{-0,48}{-0,02} \Rightarrow 24$

Subject

Date : Year: Month: Day:

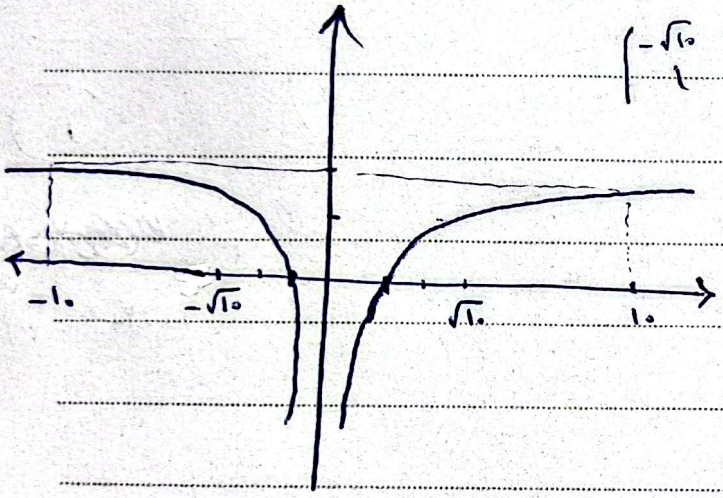
الف) $y = 9^{\log_3 x} \to x^{\log_3 9} \Rightarrow \boxed{x^2}$ (۱۰)

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



ب) $y = \log x^2$

$\begin{vmatrix} -10 \\ 2 \end{vmatrix}$	$\begin{vmatrix} 10 \\ 2 \end{vmatrix}$
$\begin{vmatrix} -1 \\ 0 \end{vmatrix}$	$\begin{vmatrix} +1 \\ 0 \end{vmatrix}$
$\begin{vmatrix} -\sqrt{10} \\ 1 \end{vmatrix}$	$\begin{vmatrix} +\sqrt{10} \\ 1 \end{vmatrix}$



(۶)