

$$y = x^r - x \xrightarrow{x=1} y=0 \Rightarrow (A) = (1, 0)$$

$$y = x^r - x \xrightarrow{x=r} y=r \Rightarrow B = (r, r)$$

$$\begin{cases} -r + (\frac{1}{r})^{A+B} = r \Rightarrow (\frac{1}{r})^{A+B} = r \Rightarrow A+B = -1 \\ -r + (\frac{1}{r})^{rA+B} = r \Rightarrow (\frac{1}{r})^{rA+B} = r \Rightarrow rA+B = -r \end{cases}$$

$$\Rightarrow A = -1 \Rightarrow B = 0 \quad f(x) = -r + (\frac{1}{r})^{-x} \Rightarrow f(r) = -r + (\frac{1}{r})^{-r} = -r + r = 0$$

$$m(t) = m_0 \left(\frac{A}{a}\right)^{\frac{t}{V}} \Rightarrow \frac{1}{V} m_0 = m_0 \left(\frac{A}{a}\right)^t \Rightarrow \left(\frac{A}{a}\right)^t = \frac{1}{V}$$

$$\log \left(\frac{A}{a}\right)^t = \log \frac{1}{V} \Rightarrow t \log \frac{A}{a} = -\log V$$

$$\log \frac{A}{a} = \frac{1}{V} = \frac{1}{10} = \frac{1}{10} \Rightarrow \log \frac{A}{a} = \frac{1}{10}$$

$$t \log \frac{A}{a} = -\log V \Rightarrow t (\log A - \log a) = -(\log V)$$

$$\Rightarrow t \left(\frac{r \times \frac{1}{r} - r \times \frac{1}{V}}{r} \right) = -\left(\frac{1}{10} + \frac{1}{V} \right) = -\left(\frac{r \times 10 + 1}{10r} \right) \Rightarrow -at = -\frac{1}{10} \Rightarrow t = \frac{1}{10}$$

$$m(t) = m_0 \left(\frac{V}{A}\right)^{\frac{t}{V}} \Rightarrow \frac{1}{V} m_0 = m_0 \left(\frac{V}{A}\right)^{\frac{t}{V}} \Rightarrow \left(\frac{V}{A}\right)^{\frac{t}{V}} = \frac{1}{V}$$

$$\log \left(\frac{V}{A}\right)^{\frac{t}{V}} = \log \frac{1}{V} \Rightarrow \frac{t}{V} \log \frac{V}{A} = \log \frac{1}{V} \Rightarrow \frac{t}{V} (\log V - \log A) = -\log V$$

$$\log \frac{V}{A} = \frac{1}{V} = \frac{1}{10} \Rightarrow \log \frac{V}{A} = \frac{1}{10} \Rightarrow \frac{t}{V} (\log V - \log A) = -\log V$$

$$\log \frac{V}{A} = \frac{1}{10} = \frac{1}{10} \Rightarrow \log \frac{V}{A} = \frac{1}{10}$$

$$\frac{t}{V} \left(-\frac{1}{10} \right) = -\frac{1}{10} \Rightarrow \frac{t}{10} = 1 \Rightarrow t = 10$$

$$f(t) = A \left(\frac{94}{100}\right)^t \Rightarrow \frac{A}{100} = A \left(\frac{94}{100}\right)^t \Rightarrow \left(\frac{94}{100}\right)^t = \frac{1}{100}$$

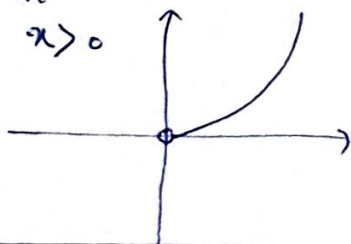
$$\Rightarrow \log \left(\frac{94}{100}\right)^t = \log \frac{1}{100} \Rightarrow t (\log 94 - \log 100) = -\log 100$$

$$\rightarrow t (\log 94 + \log 10^{-2}) = -\log 10^2$$

$$\Rightarrow t (0.973 + 0.176 - 2) = -2 \Rightarrow t (1.149 - 2) = -2 \Rightarrow t (-0.851) = -2 \Rightarrow t = \frac{2}{0.851} \approx 2.35$$

ا) $f(x) = a^{\log_r x} = x^{\log_r a}$

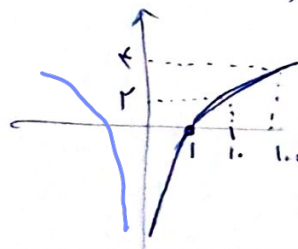
$\Rightarrow x^p$



ب) $y = \log x^p \Rightarrow p \log x \rightarrow x > 0$

$10 \rightarrow a < 1, \checkmark$

$D =]R-; 0[$



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1.