

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

$$x=r \rightarrow y=1 \Rightarrow f(r) = -r + \left(\frac{1}{r}\right)^{A+B} = 1 \Rightarrow \left(\frac{1}{r}\right)^{A+B} = 1+r \Rightarrow rA+rB = -r$$

$$\begin{cases} rA+rB = -r \\ A+B = -1 \end{cases}$$

$$A = -1 \quad B = 0$$

$$f(r) = -r + \left(\frac{1}{r}\right)^{-1} = -r + 1 = 1 - r \quad \checkmark$$

0

y

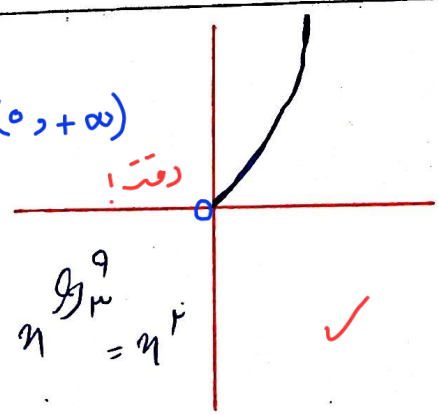
0

x

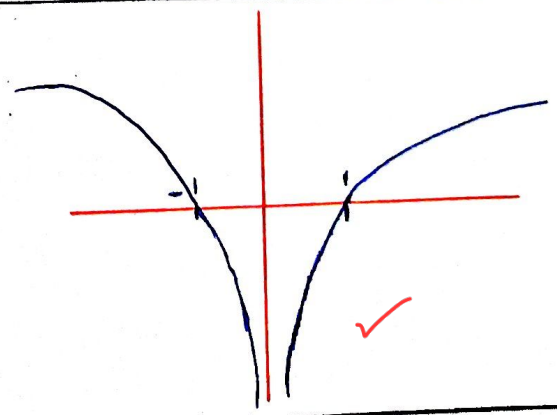
0

y

$D = (0, +\infty)$



$$g_r^x = g_r^y = x^r$$



(2)

1.

$$n = r, k \rightarrow C + \lg_{\omega}^{r, k} a + b = 0 \quad (1)$$

-r

$$n = 0 \rightarrow C + \lg_{\omega}^b = r \quad (2)$$

$$\frac{(2) - (1)}{\omega} \rightarrow \lg_{\omega}^{r, k} a + b = r \rightarrow \frac{b}{r, k a + b} = r \omega \rightarrow \frac{a}{b} = \frac{-r}{\omega}$$

$$\text{حجم باقیمانده} = \frac{M_0}{4} = M_0 \left(\frac{1}{9}\right)^t \rightarrow \left(\frac{1}{9}\right)^t = \frac{1}{4}$$

-v

$$\xrightarrow{\lg} t \lg \frac{1}{9} = \lg \frac{1}{4} \rightarrow t (r \lg r - r \lg r) = -(\lg r + \lg r)$$

$$t = \frac{-(\lg r + \lg r)}{r \lg r - r \lg r} \xrightarrow{\div \lg r} t = \frac{-(\lg r + 1)}{r \lg r - r} = \frac{-(\frac{v}{r} + 1)}{r(\frac{v}{r}) - r} = \frac{19}{r}$$

$$\frac{\lg_{\omega}^a}{\lg_{\omega}^b} = \frac{\lg r}{\lg r} = \frac{1, k}{r, k} = \frac{v}{r}$$

$r \omega = \min = 90 \times \text{second}$

$$\text{حجم باقیمانده} = \frac{M_0}{v} = \left(\frac{v}{1}\right)^t M_0 \rightarrow \left(\frac{v}{1}\right)^t = \frac{1}{v}$$

-n

$$\xrightarrow{\lg r} t \lg_{\omega}^{\frac{v}{1}} = -\lg_{\omega}^v \rightarrow t (\lg_{\omega}^v - r \lg_{\omega}^r) = -\lg_{\omega}^v$$

$$t \left(\frac{1}{4} - r \times \frac{\omega}{n}\right) = -\frac{1}{4} \rightarrow t = n \text{ نوبت} \times v = 24 \text{ نوبت}$$

$$(0,94)^n A_0 = \frac{1}{r} A_0 \rightarrow (0,94)^n = \frac{1}{r}$$

9

$$\xrightarrow{\lg} n \lg 0,94 = -\lg r \rightarrow n = \frac{-\lg r}{\lg 0,94 - 1}$$

$$n = \frac{\lg r}{1 - \lg(r^2 \times r)} = \frac{\lg r}{1 - (2\lg r + \lg r)} = \frac{0,17}{1 - (2(0,17) + 0,17)}$$

$$= \boxed{24}$$