

$m=0, y=r \rightarrow x = 1 - \log_c^{-b} \rightarrow 1 = -\log_c^{-b} \rightarrow -1 = \log_c^{-b} \rightarrow c^{-b} = -1$
 $b+c = -\frac{r}{r} \rightarrow c - \frac{1}{c} = -\frac{r}{r} \rightarrow \frac{c^2 - 1}{c} = -\frac{r}{r} \rightarrow c = \frac{1}{r}$
 $(b = \frac{1}{r}) \mid 0 = 1 - \log_{\frac{1}{r}}^{-1} \rightarrow 1 = \log_{\frac{1}{r}}^{-1} \rightarrow -1 = -1, \log a = 0, \log$
 $(u+c) \rightarrow (1)(\frac{1}{r}) = -\frac{1}{r} \quad \boxed{-\frac{1}{r}}$
 $-1, \log = -1, \log a$
 $a = 1 \checkmark$

بنیادی تطبیق
نه نمونه منفی
باشد!

$m=1, y=r \rightarrow a = 1 + c x r^{a+b} \rightarrow -1 = c x r^a x r^b$
 $m=0, y=\frac{r}{2} \rightarrow \frac{r}{2} = 1 + c x r^a \rightarrow -\frac{1}{2} = c x r^a$
 $-1 = -\frac{1}{2} x r^b \rightarrow r^b = 2$
 $f(-1) = 1 + c x r^{a+(1 \times -1)} = 1 + c x r^a x r^{-1} = f(-1)$
 $f(-1) - 1 = c x r^a x r^{-1} \rightarrow -\frac{1}{2} x \frac{1}{2} = -\frac{1}{4} \rightarrow f(-1) = 1 - \frac{1}{4} = \frac{3}{4} \checkmark$

$x = c + \log_a^b \mid \begin{cases} 0 = c + \log_a^{r, k a + b} \rightarrow c = -\log_a^{r, k a + b} \\ \log_a^b - \log_a^{r, k a + b} = x = \log_a^{r, k a + b} \rightarrow \frac{b}{r, k a + b} = r \log \rightarrow \frac{1}{2} a + -\log b = b \end{cases}$
 $r \neq b = -\log a \rightarrow \frac{a}{b} = \frac{r}{-\log} = -\frac{1}{r} \checkmark$

$f(x) = \log_x (|x^r - r| - x)$
 $|x^r - r| > 0 \mid x > 0 \rightarrow x^r - r > 0 \rightarrow x^r - r > x \rightarrow x^r - r - x > 0 \rightarrow x^r - x - r = (x+1)(x-r) > 0$
 $|x^r - r| > 0 \mid x < 0 \rightarrow x^r - r < -x \rightarrow x^r - r - x < 0 \rightarrow x^r - x - r = (x-1)(x+r) < 0$
 $D_f = (-\infty, -1) \cup (1, +\infty) \cup (r, +\infty) \checkmark$

$f(x) = x + r^{b-a} \mid g(x) = -x^r - r^{b-a} + 1 \rightarrow x + r^{b-a} = -1 - r^r + 1$
 $r = x^{p-a} \rightarrow b-a=1 \mid f^{-1}(1) = -1 \rightarrow x + r^{b-a} = 1 \rightarrow r^{b-a} = 1 \mid b-a=1$
 $\begin{cases} b-a=1 \\ b+a=r \\ r \neq r \end{cases} \rightarrow r = r \checkmark$
 $r^{b-a} = r^{-1} = \frac{1}{r} \checkmark$

$$\left. \begin{aligned} n=1 &\rightarrow 0 = -r + \left(\frac{1}{r}\right)^{A+B} \rightarrow r = \left(\frac{1}{r}\right)^{A+B} \rightarrow A+B = -1 \\ n=2 &\rightarrow r = -r + \left(\frac{1}{r}\right)^{A+B} \rightarrow r = \left(\frac{1}{r}\right)^{A+B} \rightarrow 2A+B = -2 \end{aligned} \right\} \rightarrow A = -1, B = 0$$

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$$f(r) = -r + \left(\frac{1}{r}\right)^{-1 \times r + 0} = -r + \left(\frac{1}{r}\right)^{-r} = -r + 1 = 0 \quad \checkmark$$

مقدار اولی ۲۰ چند دقیقه بعد؟ $\frac{1}{4}^n$ بعد از هر ساعت $\left(\frac{1}{9}\right)^n$

$$\left(\frac{1}{9}\right)^n = \frac{1}{4} \rightarrow \log_{\frac{1}{9}} \frac{1}{4} = n \rightarrow \frac{-\log_{\frac{1}{9}} 4}{\log_{\frac{1}{9}} \frac{1}{9}} = n \Rightarrow \frac{-\log_{\frac{1}{9}} 4 - \log_{\frac{1}{9}} 1}{\log_{\frac{1}{9}} 1 - \log_{\frac{1}{9}} 9} = n \Rightarrow \frac{-\log_{\frac{1}{9}} 4}{\log_{\frac{1}{9}} 9 - 1} = n$$

$$n = \frac{0,417 - 0,017}{1,221 - 1,471} = 0,24 \xrightarrow{\text{چند دقیقه}} 0,24 \times 60 = 14,4 \text{ دقیقه}$$

$$\log_{\frac{1}{9}} 4 = \frac{1}{\log_9 4} = \frac{1}{2,202} = 0,454$$

$$\log_{\frac{1}{9}} 9 = \frac{1}{\log_9 9} = \frac{1}{1} = 1$$

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مقدار اولی ۱۰۰ مقدار اشیای باقی مانده پس از n هفته $\left(\frac{1}{8}\right)^n$

$$\left(\frac{1}{8}\right)^n = \frac{1}{100} \rightarrow \log_{\frac{1}{8}} \frac{1}{100} = n \Rightarrow \frac{-\log_{\frac{1}{8}} 100}{\log_{\frac{1}{8}} \frac{1}{8}} = n \Rightarrow \frac{-\log_{\frac{1}{8}} 100}{\log_{\frac{1}{8}} 8 - 1} = n$$

$$n = \frac{-1,497}{-1,058} = 1,414 \text{ هفته} \rightarrow 1,414 \times 7 = 9,9 \text{ روز}$$

با اعداد سری راحت تر میشه کار کرد

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$$\log_{\frac{1}{8}} 100 = \frac{1}{\log_8 100} = \frac{1}{1,903} = 0,525$$

$$\log_{\frac{1}{8}} 8 = \frac{1}{\log_8 8} = \frac{1}{1} = 1$$

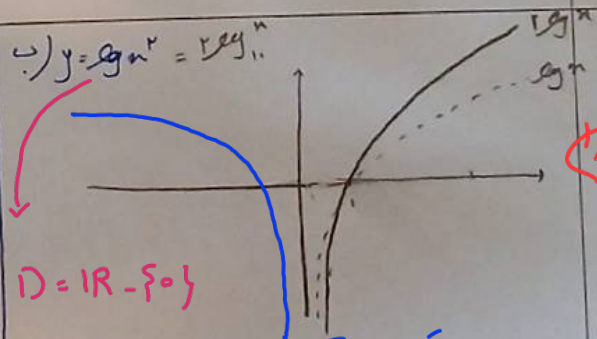
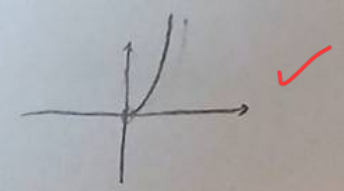
غلطت اولی ۱۰۰ غلظت روز اولی $\frac{1}{100} \times 100 = 1$ غلظت نوزدهم $\left(\frac{1}{100}\right)^{19} = 100 \left(1 - \frac{1}{100}\right)^{19}$

$$\frac{1}{2} \times 100 = 100 \times \left(\frac{99}{100}\right)^n \rightarrow \left(\frac{99}{100}\right)^n = \frac{1}{2} \rightarrow \log_{\frac{99}{100}} \frac{1}{2} = n \Rightarrow \frac{-\log_{\frac{99}{100}} 2}{\log_{\frac{99}{100}} \frac{99}{100} - 1} = n$$

$$\frac{-\log_{\frac{99}{100}} 2}{\log_{\frac{99}{100}} 99 - \log_{\frac{99}{100}} 100 - 1} = \frac{-0,143}{-0,0105 - 1} = 13,6 \text{ روز}$$

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الف) $y = 9 \log_{\frac{1}{9}} x = n \log_{\frac{1}{9}} x = x^2$



$D = \mathbb{R} - \{0\}$

دامنه رویانه قبل از تعین ضابطه حساب کن!

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$$\text{حجم باقیمانده} = \frac{m_0}{4} = m_0 \left(\frac{\lambda}{9}\right)^t \rightarrow \left(\frac{\lambda}{9}\right)^t = \frac{1}{4} \quad -V$$

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

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

$$\frac{\lg_r^5}{\lg_r^5} = \frac{\lg r}{\lg r} = \frac{1, r}{r, r} = \frac{V}{1r}$$

$$r \lambda = \min = 90 \times \text{ساعت}$$

$$\text{حجم باقیمانده} = \frac{m_0}{V} = \left(\frac{V}{\lambda}\right)^t m_0 \rightarrow \left(\frac{V}{\lambda}\right)^t = \frac{1}{V} \quad -A$$

$$\xrightarrow{\lg_r} t \lg_r \frac{V}{\lambda} = -\lg_r V \rightarrow t (\lg_r V - r \lg_r r) = -\lg_r V$$

$$t \left(\frac{10}{4} - r \times \frac{5}{n}\right) = -\frac{10}{4} \rightarrow t = 1 \text{ ماه} \times V = 24 \text{ روز}$$