

$$y = 1 - \log_c^{ax-b} \rightarrow x = -\frac{r}{c} \rightarrow \log_c^{\frac{-r}{c}a-b} = 1 \quad (1)$$

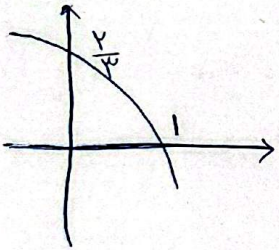
$$-\frac{r}{c}a - b = c \rightarrow b + c = -\frac{r}{c}a = -\frac{r}{c} \Rightarrow \boxed{a=1}$$

$$x=0 \rightarrow y = 1 - \log_c^{-b} \rightarrow \log_c^{-b} = -1 \rightarrow -b = \frac{1}{c} \rightarrow -bc = 1 \rightarrow bc = -1$$

$$b + c = -\frac{r}{c} \rightarrow c - \frac{1}{c} = -\frac{r}{c} \rightarrow \boxed{c = -c} \text{ و}$$

$$\boxed{c = \frac{1}{r}} \rightarrow \boxed{b = -r}$$

$$(a+c)b \rightarrow \left(1 + \frac{1}{r}\right) \times (-r) = \boxed{-r} \rightarrow \text{جواب}$$



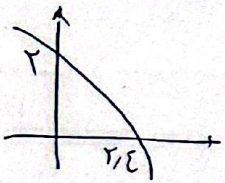
$$f(x) = 1 + Cx^r^{a+bx} \quad f(-1) = ? \quad (2)$$

$$x=1 \rightarrow y=0 \rightarrow 1 + Cx^r^{a+b} = 0 \rightarrow Cx^r^{a+b} = -1$$

$$x=0 \rightarrow y = \frac{r}{r} \rightarrow 1 + Cx^r^a = \frac{r}{r} \rightarrow Cx^r^a = \frac{1}{r} = -r^{-1} \rightarrow \boxed{C = -r^{-1-a}}$$

$$-r^{-1-a} \times r^{a+b} = -1 \rightarrow r^{b-1} = 1 \rightarrow \boxed{b=1}$$

$$f(-1) = 1 + \left(-r^{-1-a} \times r^{a-1}\right) = 1 - r^{-r} = 1 - \frac{1}{r} = \boxed{\frac{r-1}{r}} \rightarrow \text{جواب}$$



$$y = C + \log_\delta^{ax+b} \quad (3)$$

$$x=0 \rightarrow y=r \rightarrow C + \log_\delta^b = r$$

$$\xrightarrow{\text{تفکیک}} \log_\delta^b - \log_\delta^{r/c a+b} = r$$

$$x=r/c \rightarrow y=0 \rightarrow C + \log_\delta^{r/c a+b} = 0$$

$$\log_\delta \frac{b}{r/c a+b} = r \rightarrow \frac{b}{r/c a+b} = r \delta \xrightarrow{\text{حاصلی}} \frac{r/c a+b}{b} = \frac{1}{r \delta}$$

$$\frac{r/c}{1} \times \frac{a}{b} + 1 = \frac{1}{r \delta} \rightarrow \frac{r/c}{r/c} \times \frac{a}{b} = \frac{-1}{r/c} \rightarrow \boxed{\frac{a}{b} = -\frac{r}{c}} \rightarrow \text{جواب}$$

$$|x^r - c| - x > 0 \rightarrow -\sqrt{c} < x < \sqrt{c} \rightarrow -x^r + c - x > 0 \rightarrow x^r + x - c < 0 \rightarrow (x+c)(x-1) < 0$$

$$\frac{-r}{+|-|+} \rightarrow (-c+1) \cap (-\sqrt{c}, \sqrt{c}) \Rightarrow \boxed{(-\sqrt{c}, +1)}$$

$$|x^r - c| - x > 0 \rightarrow x > \sqrt{c}, x < -\sqrt{c} \rightarrow x^r - x - c > 0 \rightarrow (x-c)(x+1) > 0 \quad D \neq$$

$$\frac{-1}{+|-|+} \rightarrow x > c, x < -1 \Rightarrow \boxed{(r, +\infty) \cup (-\infty, -r)}$$

$$f(x) = r + r^{b-a} \rightarrow x=1 \rightarrow r + r^{b-a}$$

$$r + r^{b-a} = \varepsilon \rightarrow b-a=1$$

$$g(x) = -x^r - rx + 1 \rightarrow x=1 \rightarrow \varepsilon$$

$$f(1) = 1 \rightarrow f(\varepsilon) = 1 \Rightarrow r + r^{b+a} = 1 \rightarrow b+a = 2$$

$$rb = \varepsilon \rightarrow \begin{cases} b=r \\ a=1 \end{cases} \quad rb-a = \varepsilon - 1 = 2$$

$$f(x) = \left(\frac{1}{r}\right)^{Ax+B} - r$$

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

$$x=r \rightarrow \left(\frac{1}{r}\right)^{rA+B} - r = r \rightarrow \left(\frac{1}{r}\right)^{rA+B} = \varepsilon$$

$$\rightarrow \begin{cases} A+B = -1 \\ rA+B = -r \end{cases} \rightarrow \begin{cases} A = -1 \\ B = 0 \end{cases}$$

$$y = x^r - x$$

$$f(r) = \left(\frac{1}{r}\right)^{-r+0} - r = 1 - r = 2 \rightarrow \text{جواب}$$

$$m(t) = m_0 \left(\frac{1}{9}\right)^{\frac{t}{4}} \Rightarrow \frac{1}{9} m_0 = m_0 \left(\frac{1}{9}\right)^{\frac{t}{4}} \rightarrow \left(\frac{1}{9}\right)^{\frac{t}{4}} = \frac{1}{9}$$

حجم عنصر در هر ساعت $\frac{1}{9}$ برابر می شود:

$$\log_{\frac{1}{9}} \left(\frac{1}{9}\right)^{\frac{t}{4}} = \log_{\frac{1}{9}} \frac{1}{9}$$

$$\rightarrow t(\log_{\frac{1}{9}} 1 - \log_{\frac{1}{9}} 9) = -\log_{\frac{1}{9}} 9 \rightarrow t(3 \log_{\frac{1}{9}} 3 - 2 \log_{\frac{1}{9}} 3) = -\log_{\frac{1}{9}} 3 - \log_{\frac{1}{9}} 3$$

$$\log_{\frac{1}{9}} 3 = \frac{r\varepsilon}{10} \rightarrow \log_{\frac{1}{9}} 3 = \frac{\varepsilon}{10}$$

$$t \left(\frac{18}{10} - \frac{10}{10} \right) = \frac{\varepsilon}{10} - \frac{\varepsilon}{10} \rightarrow t = \frac{19}{3} \text{ ساعت}$$

$$\log_{\frac{1}{9}} 3 = \frac{15}{10} \rightarrow \log_{\frac{1}{9}} 3 = \frac{3}{2}$$

$$\frac{19}{3} \times 40 = 253.33 \text{ min} \rightarrow \text{جواب}$$

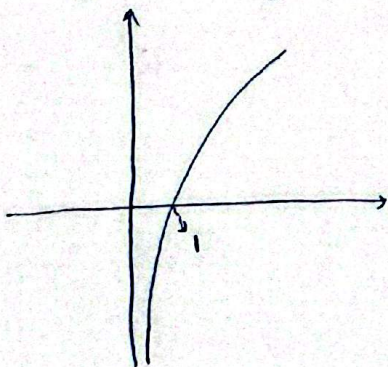
$$m(t) = m_0 \left(\frac{r}{\lambda}\right)^{\frac{t}{v}} \Rightarrow \frac{1}{v} m_0 = m_0 \left(\frac{r}{\lambda}\right)^{\frac{t}{v}} \Rightarrow \left(\frac{r}{\lambda}\right)^{\frac{t}{v}} = \frac{1}{v}$$

$$\frac{t}{v} (\log_r v - 3 \log_r r) = -\log_r v \rightarrow \frac{t}{v} \left(\frac{\log v}{\log r} - 3 \times \frac{\log \lambda}{\log r} \right) = -\frac{\log v}{\log r} \Rightarrow t = 56 \rightarrow \text{جواب}$$

$$f(t) = A \left(\frac{4r}{100}\right)^t = \log \frac{1}{r} \Rightarrow t(\log 4r - \log 100) = -\log r$$

$$t(2 \log r + \log r - 2) = -\log r \Rightarrow t(3 \log r - 2) = -\log r \Rightarrow t = 12 \rightarrow \text{جواب}$$

$$y = \log x^r = r \log x$$



$$y = 9 \log x^2 = 2 \log x^9 = x^r$$

