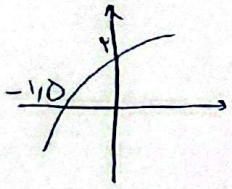


14, 2



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

(۲) ①

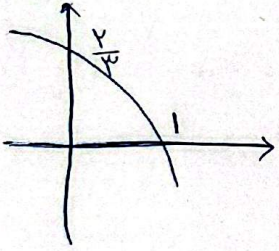
$$-\frac{r}{c}a - b = c \rightarrow b + c = -\frac{r}{c}a = -\frac{r}{c} \Rightarrow \boxed{a=1} \checkmark$$

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

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

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

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



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

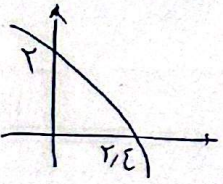
(۲) ②

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

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

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

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



$$y = C + \log_\delta^{ax+b}$$

(۲) ③

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

$$\text{تفاضل} \quad \log_\delta^b - \log_\delta^{r\epsilon a+b} = r$$

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

$$\log_\delta \frac{b}{r\epsilon a+b} = r \rightarrow \frac{b}{r\epsilon a+b} = r\delta \xrightarrow{\text{حاصل}} \frac{r\epsilon a+b}{b} = \frac{1}{r\delta}$$

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

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

④

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

(۲)

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

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

$$(-\infty, 1) \cup (r, +\infty)$$

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

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

(2) (5)

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

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

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

جواب

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

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

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

$$y = x^r - x$$

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

(2) (4)

$A = -1$

$B = 0$

(7) حجم مصرف در هر ساعت  $\frac{1}{9}$  برابر می شود:

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

$$\log_9 \left(\frac{1}{9}\right)^t = \log_9 \frac{1}{9} \rightarrow t(\log_9 1 - \log_9 9) = -\log_9 9 \rightarrow t(0 - 1) = -1 \rightarrow t = 1$$

$$\log_9 9 = \frac{1 \cdot 1}{1 \cdot 1} \rightarrow \log_9 9 = 1$$

$$t \left( \frac{18}{18} - \frac{10}{9} \right) = \frac{0}{18} - \frac{0}{9} \rightarrow t = \frac{19}{3}$$

$$\log_9 9 = \frac{1 \cdot 1}{1 \cdot 1} \rightarrow \log_9 9 = 1$$

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

$$m(t) = m_0 \left(\frac{1}{8}\right)^{\frac{t}{5}} \Rightarrow \frac{1}{8} m_0 = m_0 \left(\frac{1}{8}\right)^{\frac{t}{5}} \Rightarrow \left(\frac{1}{8}\right)^{\frac{t}{5}} = \frac{1}{8}$$

$$\frac{t}{5} (\log_8 1 - \log_8 8) = -\log_8 8 \rightarrow \frac{t}{5} (0 - 1) = -1 \rightarrow t = 5$$

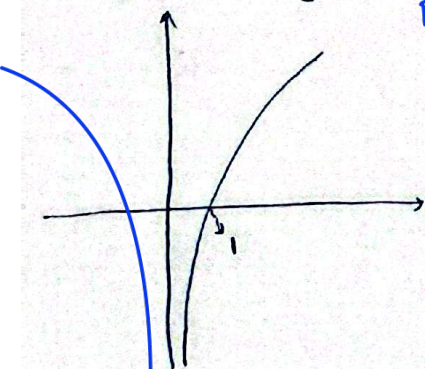
$$f(t) = A \left(\frac{49}{100}\right)^t = \log \frac{1}{3} \Rightarrow t(\log 49 - \log 100) = -\log 3$$

$$t(2 \log 7 + \log 7 - 2) = -\log 3 \Rightarrow t(3 \log 7 - 2) = -\log 3 \Rightarrow t = 12$$

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

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

دامنه رویه قبل از تعریف  
ضابطه حساب کن!



$$y = 9 \log x^2 = 2 \log 9 = 2 \log 3^2 = 4 \log 3$$

(الف) (10)

(25)

