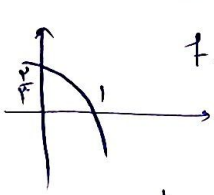


$$y = 1 - \log_c (a^x - b) \rightarrow x=0 \rightarrow \log_c^{-b} = -1 \rightarrow -b = \frac{1}{c}$$

$$x = -1,8 \rightarrow \log_c^{-1,8a-b} = 1 \rightarrow -1,8a-b = c \rightarrow b+c = -1,8a = -\frac{r}{9}$$

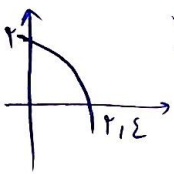
$$\rightarrow \boxed{a=1} \checkmark \rightarrow \frac{1}{-b} = -1,8a-b \Rightarrow \frac{1}{b} = 1,8+b \rightarrow b^2 + 1,8b - 1 = 0 \rightarrow \begin{cases} b = \frac{1}{9} \times \\ b = -2 \checkmark \end{cases}$$

$$\rightarrow \boxed{b=-2} \checkmark \rightarrow \boxed{c = \frac{1}{9}} \checkmark \rightarrow (a+c)b = \left(\frac{r}{9}\right)(-2) = \boxed{-\frac{2r}{9}} \checkmark$$



$$f_x = 1 + cx^r^a + bx \rightarrow \begin{cases} x=0 \rightarrow cx^r^a = -\frac{1}{r} \\ x=1 \rightarrow cx^r^{a+b} = -1 \end{cases} \left\} \frac{cx^r^a \times r^b}{cx^r^a} = r^b$$

$$\rightarrow r^b = r \rightarrow \boxed{b=1} \checkmark \rightarrow f_{(-1)} = 1 + cx^r^{a-1} = 1 + \frac{cx^r^a}{r} = 1 - \frac{1}{9} = \frac{8}{9} \checkmark$$



$$y = c + \log_x^{a+b} \rightarrow f_{(1)} - f_{(2)} = \log_{\delta}^b - \log_{\delta}^{r, \delta a+b} = r$$

$$\rightarrow \log_{\delta} \frac{b}{r, \delta a+b} = r \rightarrow \frac{b}{r, \delta a+b} = r\delta \rightarrow 4 \cdot a + r\delta b = b$$

$$\rightarrow 4 \cdot a = -r\delta b \rightarrow \frac{a}{b} = \frac{-r\delta}{4} = \boxed{-\frac{r}{8}} \checkmark$$

$$f_{(x)} = \log_{\delta} (|x^r - r| - x) \rightarrow |x^r - r| - x > 0 \rightarrow |x^r - r| > x$$

$$\rightarrow \begin{cases} x^r - r > x \rightarrow x^r - x - r > 0 \\ x^r - r < -x \rightarrow x^r + x - r < 0 \end{cases} \left\} \begin{array}{l} \frac{-1}{x} \frac{r}{x+1} \\ \frac{-r}{x} \frac{1}{x+1} \end{array} \right\} \rightarrow \begin{array}{c} \text{Number line with points } -1, r \\ \text{Intervals } (-\infty, -1) \cup (r, +\infty) \end{array}$$

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

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

$$\rightarrow \boxed{a=1} \checkmark \quad \boxed{b=r} \checkmark \rightarrow r^{b-a} = r^{-1} = \boxed{\frac{1}{r}} \checkmark$$

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

$$\rightarrow n=1 \rightarrow -r + r^{-(A+B)} = 0 \rightarrow A+B = -1$$

$$\rightarrow n=2 \rightarrow -r + r^{-(2A+B)} = r \rightarrow 2A+B = -2$$

$$\rightarrow \boxed{A = -1} \quad \boxed{B = 0}$$

$$\rightarrow f_r = -r + \left(\frac{r}{r}\right)^{-r} = \boxed{r} \checkmark$$

(2)

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

$$\rightarrow \log \frac{1}{4} = t \log \frac{1}{9} \rightarrow t = \frac{\log \frac{1}{4}}{\log \frac{1}{9}} = \frac{\log 1 - \log 4}{\log 1 - \log 9}$$

$$= \frac{0 - (\log 2 + \log 2)}{0 - (\log 3 + \log 3)} = \frac{-2 \log 2}{-2 \log 3} = \frac{\log 2}{\log 3}$$

$$\xrightarrow{\log 2 = \frac{8}{11}, \log 3 = \frac{8}{17}} t = \frac{-\left(\frac{8}{11} + \frac{8}{11}\right)}{\frac{18}{11} - \frac{16}{11}} = \frac{-\frac{16}{11}}{\frac{2}{11}} = -\frac{16}{2} = -8$$

$$\rightarrow \frac{98}{18} \times 40 = 218 \text{ دقيقة} \checkmark$$

(2)

$$\frac{1}{v} = \left(\frac{v}{\lambda}\right)^t$$

$$\rightarrow \log \frac{1}{v} = t \log \frac{v}{\lambda} \rightarrow t = \frac{\log \frac{1}{v}}{\log \frac{v}{\lambda}} = \frac{\log 1 - \log v}{\log v - \log \lambda}$$

$$\rightarrow t = \frac{0 - \log v}{\log v - 3 \log v} = \frac{-\log v}{-2 \log v} = \frac{1}{2}$$

$$\xrightarrow{\log v = \frac{8}{17}, \log \lambda = \frac{8}{11}} t = \frac{-\frac{8}{17}}{\frac{8}{11} - \frac{16}{11}} = \frac{-\frac{8}{17}}{-\frac{6}{11}} = \frac{8}{17} \times \frac{11}{6} = \frac{22}{15}$$

$$\rightarrow \boxed{84 \text{ روز}} \checkmark$$

(2)

$$\frac{1}{r} = \left(\frac{97}{100}\right)^n$$

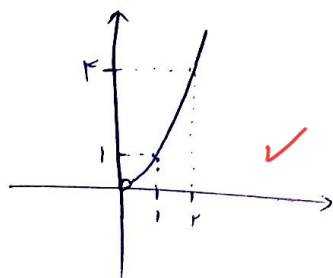
$$\rightarrow \log \frac{1}{r} = n \log \frac{97}{100} \rightarrow n = \frac{\log 1 - \log r}{\log 97 - \log 100}$$

$$= \frac{-0.141}{(0.18 + 0.141) - 2} = \frac{-0.141}{1.18 + 0.141 - 2} = \frac{-0.141}{-0.679} = 21 \text{ روز} \checkmark$$

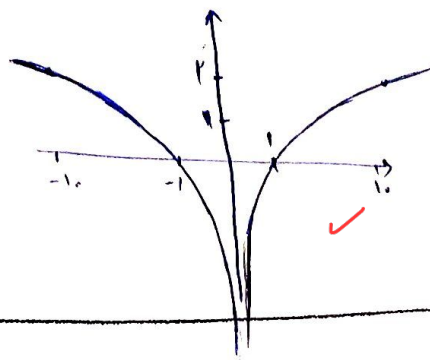
(2)

الف) $y = 9 \log^2 x$

$Df = (0, +\infty)$



ب) $\log x^t$



(2)