① $-1/5a - b = c \rightarrow -1/8a - b = -b - \frac{3}{2} \rightarrow \boxed{a = 1}$

$-b = \frac{1}{c} \rightarrow \frac{c^2 - 1}{c} = \frac{-3}{2} \rightarrow 2c^2 + 3c - 2 = 0 \rightarrow c^2 + 3c - 4 = 0$

$\boxed{c = \frac{1}{2}}$ قبول $\quad \boxed{c = \frac{-4}{2} = -2}$ غیرقابل قبول

$b + \frac{1}{2} = \frac{-3}{2} \rightarrow \boxed{b = -2}$

$\left(1 + \frac{1}{2}\right) \times -2 = \boxed{-3}$

② $\begin{cases} c \times 3^a = \frac{1}{3} \\ c \times 3^{a+b} = -1 \end{cases} \rightarrow 3^b = 3 \rightarrow \boxed{b = 1}$,

$f(-1) = 1 + \underbrace{c \times 3^a}_{\frac{-1}{3}} \times \left(\frac{1}{3}\right)^1 = \boxed{\frac{8}{9}}$

$\frac{-1}{9}$

③ $c + \log_5^b = 2 \qquad \log_5^{\frac{b}{2/5a+b}} = 2 \rightarrow \frac{b}{2/5a+b} = 25 \rightarrow 90a + 25b = b$

$c + \log_5^{2/5a+b} = 0 \qquad 90a = -24b$

$\boxed{\frac{a}{b} = \frac{-2}{5}} \leftarrow a = \frac{-2}{5} b$

④ $|x^2 - 2| - x > 0 \rightarrow |x^2 - 2| > x \rightarrow x^2 - x - 2 > 0 \quad x \geq \sqrt{2} \rightarrow x > 2$ (I)

$x^2 + x - 2 < 0 \quad -\sqrt{2} < x < \sqrt{2} \rightarrow x \in (-\sqrt{2}, 1]$ (II)

$x^2 - x - 2 > 0 \quad x < -\sqrt{2} \quad x < -\sqrt{2}$ (III)

(I) ∪ (II) ∪ (III) = $\boxed{(-\infty, 1) \cup (2, +\infty)}$

⑤ $\underbrace{(1, 2) \text{ و } (-1, 10)}_{\text{در } f(x) \text{ صدق می‌کنند.}} \rightarrow \begin{cases} b - a = 1 \\ b + a = 3 \end{cases}$

$2b = 4 \rightarrow \boxed{b = 2}$, $\boxed{a = 1} \rightarrow \boxed{2 \times 2 - 1 = 3}$

⑥ $\underbrace{(1, 0) \text{ و } (2, 2)}_{\text{در } f(x) \text{ صدق می‌کنند.}} \rightarrow \begin{cases} A + B = -1 \\ 2A + B = -2 \end{cases} \rightarrow \boxed{A = -1} \quad \boxed{B = 0} \rightarrow \boxed{f(3) = 9}$

⑦ $x \times \left(\frac{8}{9}\right)^t = \frac{1}{4} \times x \rightarrow t\left(\log_3^8 - \log_3^9\right) = \left(\log_3^1 - \log_3^9\right)$

$t\left(3\log_3^2 - 2\right) = 0 - \left(1 + \log_3^2\right)$

$\frac{\log_2^5}{\log_2^3} = \log_3^5 = \frac{5}{12} = \frac{7}{12} \rightarrow t\left(\frac{-11}{6}\right) = \frac{-19}{12} \rightarrow t = \frac{19}{3} h$

$\frac{19}{3} \times 60 = \boxed{380 \text{ min}}$

⑧ $x \times \left(\frac{۷}{۸}\right)^t = \frac{۱}{۷} \times x \rightarrow t\left(\log_{۳}^{۷} - \log_{۳}^{۸}\right) = \log_{۳}^{۱} - \log_{۳}^{۷}$

$t\left(\frac{۵}{۳} - ۳\left(\frac{۵}{۸}\right)\right) = ۰ - \frac{۶}{۳} \rightarrow t\left(\underbrace{\frac{۵}{۳} - \frac{۱۵}{۸}}_{=\frac{۵}{۲۴}}\right) = -\frac{۵}{۳} \rightarrow \underbrace{t = ۸}_{\text{جواب}} \rightarrow ۸ \times ۷ = ۵۶$

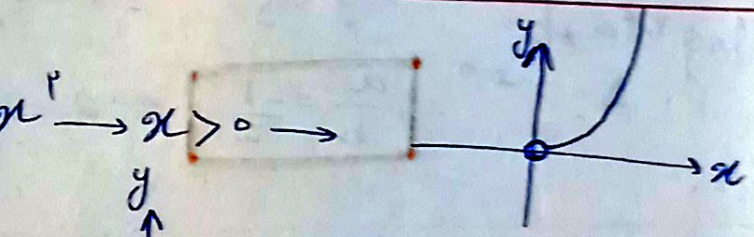
⑨ $x \times \left(\frac{۹۶}{۱۰۰}\right)^t = \frac{۱}{۳} \times x \rightarrow t\left(\log^{۹۶} - \log^{۱۰۰}\right) = -\log^{۳}$

$t\left(۵\log^{۲} + \log^{۳} - ۲\right) = -\log^{۳} \rightarrow t\left(\underbrace{۱/۲ + ۰/۴۸ - ۲}_{-۰/۵۲}\right) = -۰/۴۸$

$t = ۴۶/۱۵$

⑩

الف) $۹^{\log_{۳}^{x}} \rightarrow x^{\log_{۳}^{۹}} \rightarrow x^{۲} \rightarrow x > ۰ \rightarrow$



ب) $\log^{x^{۲}} \rightarrow ۲\log^{x} \rightarrow$