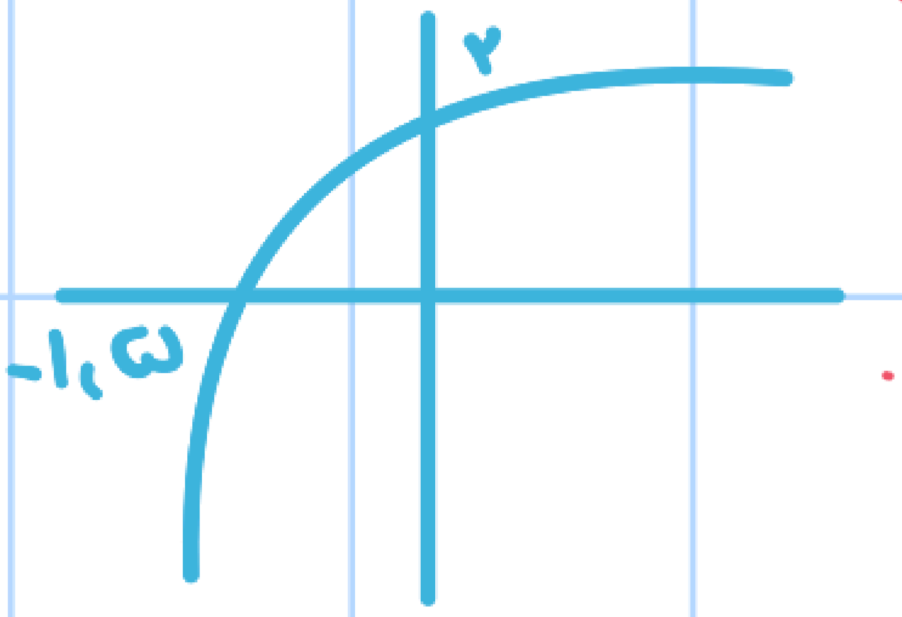
[illegible] ←

۱۷٫۵

۱ ←

$y = 1 - \log_c^{ax-b}$



$2 = 1 - \log_c^{-b} \Rightarrow -1 = \log_c^{-b} \Rightarrow -1/c = b$

$\underbrace{b}_{-1/c} + c = -3/2$ $\Rightarrow c^2 + \frac{3}{2}c - 1 = 0$

$(c - 1/2)(c + 2)$

$\Rightarrow c = \underbrace{-2}_{\text{غ ق ق}}, 1/2$

$\rightarrow c = 1/2$

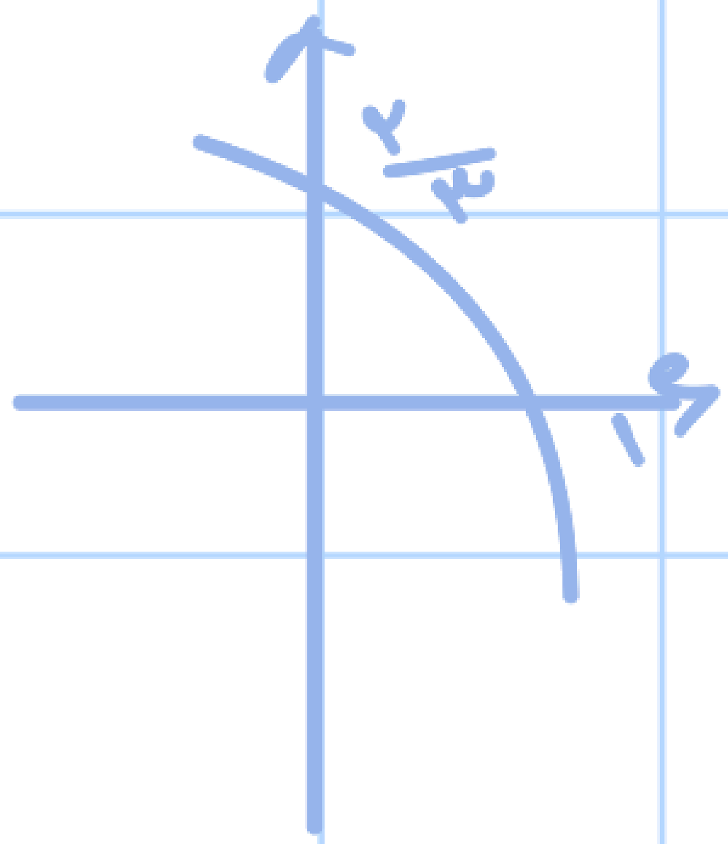
د

$c = 1/2,\ b = -2$

$0 = 1 - \log_{1/2}^{-1.5a+2} \Rightarrow 1 = \log_{1/2}^{-1.5a+2} \Rightarrow \frac{1}{2} = -\frac{3}{2}a + \frac{4}{2} \Rightarrow a = 1$

$(1 + \frac{1}{2})x - 2 = \frac{3}{2}x - 2 = \boxed{-3}$

۲ ←



$y = 1 + c \times 3^{a+bx}$

$\frac{2}{3} = 1 + c \times 3^a \Rightarrow -\frac{1}{3} = c \times 3^a \Rightarrow$

$-3^{-1} = c \times 3^a$

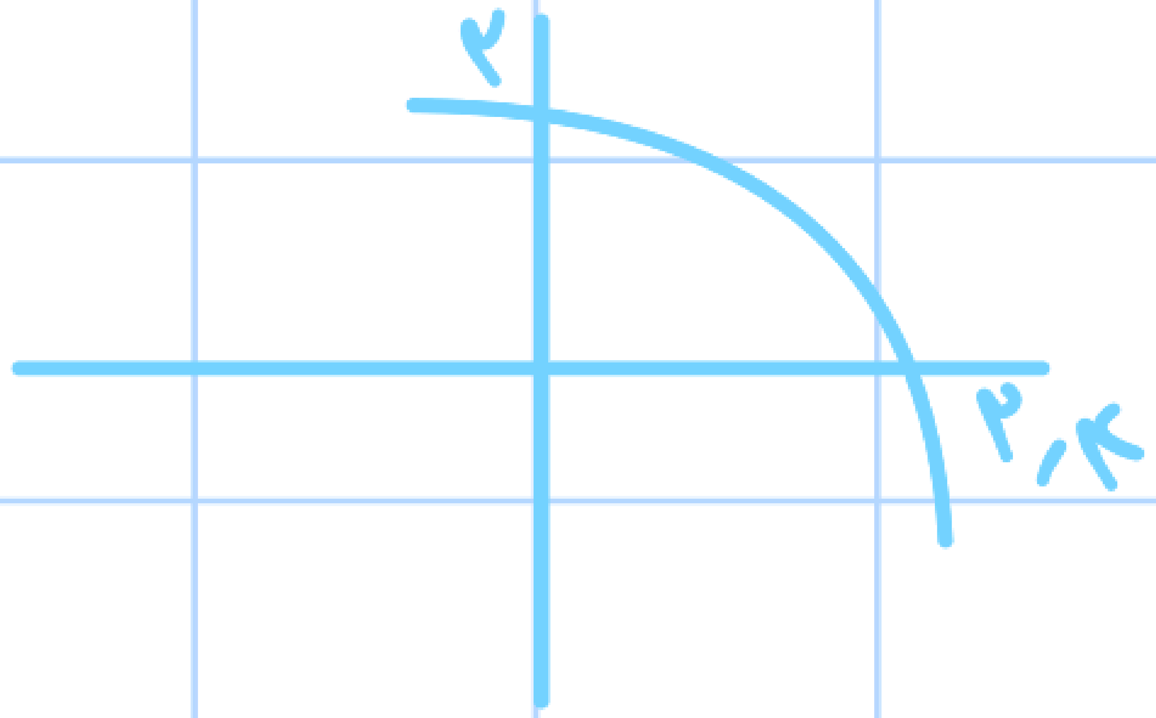
$0 = 1 + c \times 3^{a+b} \Rightarrow -1 = c \times 3^{a+b} \Rightarrow -1 = c \times 3^a \times 3^b$ $\Big\} \Rightarrow$

د

$$-1 = -\frac{1}{3} \times 3^{b} \Rightarrow b = 1$$

$$y = 1 + c \times 3^{a-1} \rightarrow y = 1 + \frac{\cancel{c \times 3^{a-2}}^{\,-1/3}}{3} =$$

$$y = 1 - \frac{1}{9} = \boxed{\frac{8}{9}}$$



$$y = c + \log_5^{ax+b}$$ ←۳

$$2 = c + \log_5^{b}$$

$$0 = c + \log_5^{2.4a+b} \Rightarrow c = -\log_5^{2.4a+b}$$ $\Rightarrow$ ۵

$$2 = \log_5^{b} - \log_5^{2.4a+b} \Rightarrow 25 = \frac{b}{2.4a+b} \Rightarrow$$

$$60a + 25b = b \Rightarrow 60a = -24b \Rightarrow \boxed{\frac{a}{b} = \frac{-24}{60} = -0.4}$$

$$\log_4^{|x^2-2|-x} \Rightarrow x^2 - 2 \geq 0 \Rightarrow x^2 \geq 2 \rightarrow \cancel{x \geq \sqrt{2}}$$ ←۴

$$\cancel{x \leq -\sqrt{2}}$$

۱

$$\rightarrow x^2 - x - 2 > 0 \Rightarrow (x-2)(x+1) > 0$$

$$2 \quad\quad -1$$

$$\begin{array}{ccccc} & -1 & & 2 & \\ + & 0 & - & 0 & + \end{array} \Rightarrow x\ge 2 \Rightarrow (2,+\infty)\ ①$$

$-\sqrt{2}$

$x^2-2\le 0 \Rightarrow -\sqrt{2}\le x\le \sqrt{2}$

$\Rightarrow -x^2+2-x\ge 0 \Rightarrow x^2+x-2<0 \Rightarrow$

$(x+2)(x-1)<0 \Rightarrow \begin{array}{ccccc} & -2 & & 1 & \\ + & | & - & 0 & + \end{array}$

$-2 \quad 1$

$-2 \quad -\sqrt{2} \quad 1 \quad \sqrt{2} \Rightarrow [-\sqrt{2},1)\ ②$

$① \cup ② \Rightarrow \boxed{[-\sqrt{2},1)\cup(2,+\infty)}$

$D_f = (-\infty,1]\cup(2,+\infty)$

س۳

$-1 \; - 3 + 8 = 10 \Rightarrow (1,10)$

$4 = 2 + 2^{b-a} \Rightarrow 2 = 2^{b-a} \Rightarrow b-a=1$

۶

$f^{-1}(10)=-1 \Rightarrow f(-1)=10 \Rightarrow \cancel{10}=\cancel{2}+2^{b+a} \Rightarrow b+a=3$

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

$f(x) = -2+\left(\frac{1}{2}\right)^{Ax+B}$

س۴

$y = x^2 - x$

۶

$x=1 \Rightarrow 0 = -۲ + \left(\frac{1}{۲}\right)^{A+B} \Rightarrow ۲^{1} = \left(\frac{1}{۲}\right)^{A+B} \Rightarrow ۲^{1} = ۲^{-A-B} \Rightarrow$

$A+B = -1$

$x=۲ \Rightarrow \cancel{۴} = \cancel{-۴} + ۲^{-۲A-B} \Rightarrow ۲ = -۲A-B \Rightarrow -۲ = ۲A+B$

$\left.\begin{matrix} ۲A+B = -۲ \\ -A-B = 1 \end{matrix}\right\} \xrightarrow{+} A = -1 ,\ B = 0 \Rightarrow -۲ + \left(\frac{1}{۲}\right)^{-۳} = -۲+۸$

$\boxed{= ۶}$

$\frac{1}{۶}\cancel{m} = \cancel{m} \times \left(\frac{۸}{۹}\right)^{\frac{t}{۶۰}} \Rightarrow \frac{1}{۶} = \left(\frac{۸}{۹}\right)^{t/۶۰}$ ۴۳

$\log_{\frac{۸}{۹}}^{\frac{1}{۶}} = \frac{t}{۶۰} \Rightarrow \frac{۲}{\cancel{۲}} \log_{\frac{۲}{۳}}^{\frac{1}{۶}} = t/\cancel{۶۰}\ ۲۰ \Rightarrow -\log_{\frac{۲}{۳}}^{۶} = \frac{t}{۴۰}$ ۱۵

$\Rightarrow \log_{\frac{۳}{۲}}^{۶} = t/۴۰ \rightarrow \frac{\log_{۵}^{۳} + \log_{۵}^{۲}}{\log_{۵}^{۳} - \log_{۵}^{۲}} = t/۴۰$

$\left.\begin{matrix} \log_{۲}^{۵} \simeq ۲٫۴ \rightarrow \log_{۵}^{۲} \simeq \frac{10}{۲۴} \\ \log_{۳}^{۵} \simeq ۱٫۴ \rightarrow \log_{۵}^{۳} \simeq \frac{10}{۱۴} \end{matrix}\right\} \rightarrow \frac{\frac{10}{۱۴} + \frac{10}{۲۴}}{\frac{10}{۱۴} - \frac{10}{۲۴}} = t/۶۰$

$\frac{\cancel{۱۴۰ + ۲۴۰}^{\,۳۸\cancel{0}}}{\underset{۱0\cancel{0}}{\cancel{۲۴۰ - ۱۴۰}}} = t/۶\cancel{0} \Rightarrow \boxed{t = ۲۲۸\ min}$

$\frac{۱}{۷}\cancel{m} = \cancel{m} \times \left(\frac{۸۷۵}{۱۰۰۰}\right)^{t/۷} \Rightarrow \log_{\frac{\cancel{۸۷۵}}{\cancel{۱۰۰۰}}\frac{۷}{۸}}^{\frac{۱}{۷}} = t/۷ \Rightarrow$ ت ۲۸

$\log_{\frac{۱}{۷}}^{\frac{۷}{۸}} = \frac{۷}{t} \to \log_{۷}^{\frac{۸}{۷}} = ۷/t \to$ ج

$\log_۷^۸ - \log_۷^۷ = ۷/t \to ۳\log_۷^۲ - ۱ = \frac{۷}{t} \to ۳ \times \frac{\log_۳^۲}{\log_۳^۷} - ۱ = \frac{۷}{t}$

$۳ \times \frac{\frac{۱۰}{۱۶}}{\frac{۱۰}{۹}} - ۱ = ۷/t \to \cancel{\frac{۱۸}{۱۶}}^{۲/۱۶} - ۱ = ۷/t \to \frac{۱}{۸} = \frac{۷}{t} \to \boxed{t = ۵۶}$

$\log_۲^۳ \simeq ۱,۶ \Rightarrow \log_۳^۲ \simeq \frac{۱۰}{۱۶}$

$\log_۷^۳ \simeq ۰,۹ \Rightarrow \log_۳^۷ = \frac{۱۰}{۹}$

$۱۰۰ \times \left(\frac{۹۶}{۱۰۰}\right)^t = ۱۰۰ \times \left(\frac{۲۴}{۲۵}\right)^t \Leftarrow$ ۱۰۰٪ اولیه ت ۲۹

ج

۹۶٪ اولیه

$\frac{۱}{۳} \times ۱۰۰ \Leftarrow$ اولیه غلظت $\frac{۱}{۳} \Leftarrow$ غلظت

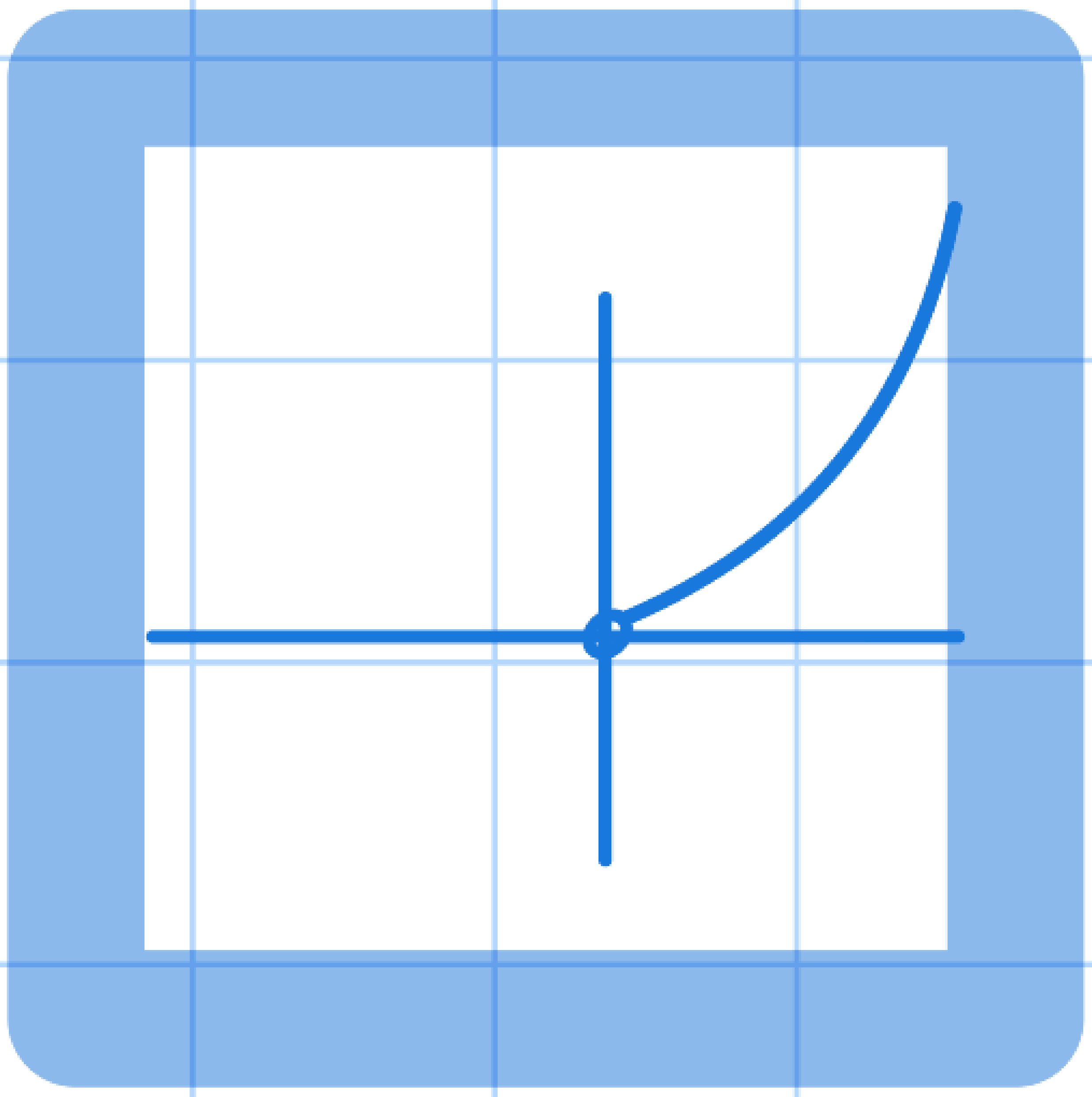
$۱۰۰ \times \left(\frac{۲۴}{۲۵}\right)^t = \frac{۱}{۳} \times ۱۰۰ \Rightarrow \log_{\frac{۲۴}{۲۵}}^{۳} = t = -\frac{\log^۳}{۳\log^۲ + \log^۳ - ۲\log^۵}$, $\quad \log^۵ = (۱ - \log^۲)$

$= -\frac{۰,۴۸}{۵ \times ۰,۳ + ۰,۴۸ - ۲} = \frac{-۰,۴۸}{-۰,۰۲} = \boxed{۲۴}$

$9^{\log_3^x}$ ، $x^{\log_3^9}$ ، x^2

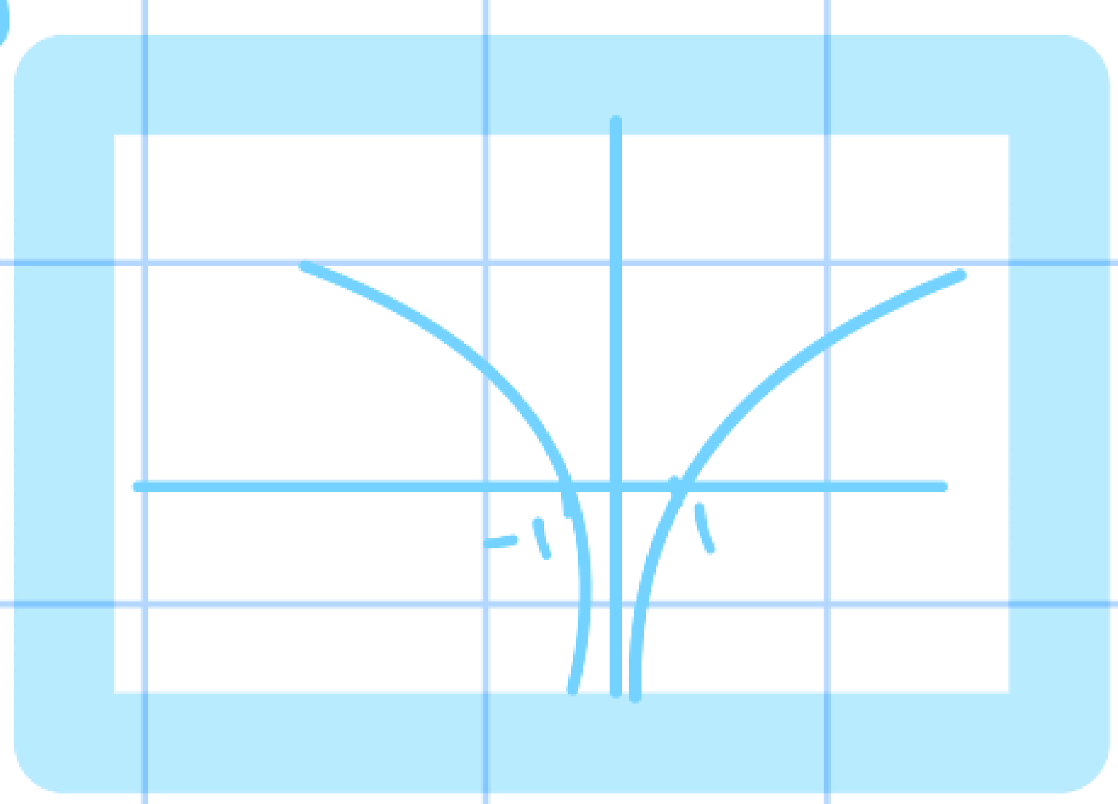
$x > 0$

دامنه‌ها متفاوت



$\log x^2 \to$ هم‌توان + بجز / هم - دمی صفر $\to 2\log x$

دامنه یکسان



1)

$(\frac{8}{9})^t = \frac{1}{4}$ $\quad \log(\frac{8}{9})^t = \log\frac{1}{4} \to t(\log 8 - \log 9) = -(\log^3 + \log^2)$

$\to t = \dfrac{-(\log^2 + \log^3)}{3\log^2 - 2\log^3}$ $\quad \left\{ \begin{array}{l} \log_2^5 \\ \log_3^5 \end{array} \right. \to \log_3^2 = \dfrac{7}{12}$

$\div \log^3$ $\quad t = \dfrac{19}{3}$ $\quad \dfrac{19}{3} \times 90 = 380$