$y = 1 - \log_c^{(ax-b)} \Rightarrow 2 = 1 - \log_c^{-b} \Rightarrow -1 = \log_c^{-b} \Rightarrow c^{-1} = -b \Rightarrow \frac{1}{c} = -b \Rightarrow$ (۱)

$b+c = -\frac{3}{2} \Rightarrow -\frac{1}{c}+c = -\frac{3}{2} \xrightarrow{\times 2c} -2+2c^2 = -3c \Rightarrow 2c^2+3c-2=0 \Rightarrow c^2+3c-4=0 \Rightarrow c = \frac{-3 \pm 5}{2} \Rightarrow c = \frac{1}{2}, b = -2$

$0 = 1 - \log_{\frac{1}{2}}^{(-1/0\,a+2)} \Rightarrow \frac{1}{2} = -1/0\,a+2 \Rightarrow -\frac{3}{2} = -\frac{3}{2}a \Rightarrow a = 1$

$\Rightarrow (a+c)b = (1+\frac{1}{2})(-2) = \frac{-3}{\frac{3}{2}}$

$f(x) = 1 + c \times 3^{a+bx} \Rightarrow 0 = 1 + c \times 3^{a+b} \Rightarrow -1 = c \times 3^{a+b} \Rightarrow -1 = -1 \times 3^{-1+b} \Rightarrow b = 1$ (۴)

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

$f(-1) = 1 + (-1) \times 3^{-1+1(-1)} = 1 + (-1) \times 3^{-2} \Rightarrow 1 - \frac{1}{9} = \frac{8}{9}$

$\downarrow \frac{1}{9}$

$y = c + \log_a^{(ax+b)} \Rightarrow 2 = c + \log_a^{b}$ (دستگاه)

$0 = c + \log_\omega^{2,5a+b}$

$2 = \log_5^{b} - \log_5^{2,5a+b} \Rightarrow -2 = \log_\omega^{\frac{2,5a+b}{b}} \Rightarrow \frac{1}{25} = \frac{2,5a+b}{b} \Rightarrow 25(2,5a) + 25b = b$ (۳)

$25(2,5a) = -24b \Rightarrow \frac{a}{b} = \frac{-24}{2,5 \times 25} = -\frac{10}{25} = -\frac{2}{5} = -0/4$

$f(x) = \log_4^{(|x^2-2|-x)} \Rightarrow |x^2-2|-x > 0 \rightarrow |x^2-2| > x \Rightarrow$ ① $x^2-2 > x \Rightarrow x^2-x-2 > 0$ (۶)

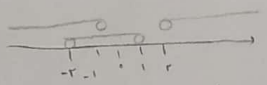
$x = -1, 2$

	-1		2	
	$+$	$-$	$+$	

(۲) $x^2-2 < -x \Rightarrow x^2+x-2 < 0$

$x = -2, 1$

	-2		1	
	$+$	$-$	$+$	



$\hookrightarrow D_f = (-2, -1)$ (۱,۵)

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

$g(1) = -1 - 2^2 + 8 = 4 \Rightarrow 4 = 2 + 2^{b-a} \Rightarrow 2 = 2^{b-a} \Rightarrow b-a = 1$ (۵)

$f(x) = 2 + 2^{b-a}$

$f(x) = 2 + 2^{b-ax} \Rightarrow 10 = 2 + 2^{b+a} \Rightarrow 8 = 2^{b+a} \Rightarrow b+a = 3$

$2b = 4,\ a = 1$

$b = 2$

$\Rightarrow 2b - a = 4 - 1 = 3$

$y = x^2 - x \rightarrow y = 1 - 1 = 0$ ①

$\hookrightarrow y = 4 - 2 = 2$ ②

$f(x) = -2 + (\frac{1}{2})^{Ax+B}$ (۴)

$f(x) = -2 + \frac{1}{2}^{A+B}$ ① $\Rightarrow -2 + \frac{1}{2}^{A+B} = 0 \Rightarrow \frac{1}{2}^{A+B} = 2 \Rightarrow A+B = -1$

$f(x) = -2 + \frac{1}{2}^{2A+B}$ ② $\Rightarrow -2 + \frac{1}{2}^{2A+B} = 2 \Rightarrow \frac{1}{2}^{2A+B} = 4 \Rightarrow 2A+B = -2$

$A = -1,\ B = 0 \Rightarrow f(x) = -2 + \frac{1}{2}^{-x} \Rightarrow f(3) = -2 + \frac{1}{2}^{-3} = \frac{2}{3}$

$P \times (\frac{8}{9})^t = \frac{1}{2} P \Rightarrow (\frac{8}{9})^t = \frac{1}{2} \Rightarrow \log_5^{(\frac{8}{9})^t} = \log_5^{2^{-1}} \Rightarrow t \log_5^{\frac{8}{9}} = -\log_5^{2}$ (۷)

$\log_5^{\frac{8}{9}} = \log_5^{8} - \log_5^{9} \Rightarrow 3\log_5^{2} - 2\log_5^{3} = 3(\frac{1}{10}) - 2(\frac{1}{10})$; $\log_5^{2} = \log_5^{1} + \log_5^{3} = \frac{1}{10} + \frac{1}{10}$

$\frac{1}{\log_2^5} = \frac{1}{10}$ $\quad \frac{1}{\log_3^5} = \frac{1}{10}$

$2t(\frac{1}{10}) - 2t(\frac{1}{10}) = -\frac{1}{10} - \frac{1}{10} \rightarrow (2t+1)\frac{1}{10} = (2t-1)\frac{1}{10} \Rightarrow 2t+1 = 2t-1 \Rightarrow 2 = 0$

دقیقه $\frac{19}{3} = 3/10$ $\Leftarrow t = \frac{19}{3} \Leftarrow 3t = 19 \Leftarrow 3t+7 = 2t+12 \Leftarrow 2t-12 = 2t+7$

$P\times(\frac{۸۷۵}{۱۰۰۰})^t = \frac{۱}{۷}P \Rightarrow \log_{۳}^{(\frac{۸۷۵}{۱۰۰۰})^t} = \log_{۳}^{\frac{۱}{۷}} \Rightarrow t\log_{۳}^{\frac{۸۷۵}{۱۰۰۰}} = -\log_{۳}^{۷}$ (۸)

$\log_{۳}^{\frac{۸۷۵}{۱۰۰۰}} = \log_{۳}^{۸۷۵} - \log_{۳}^{۱۰۰۰} = \log_{۳}^{۷\times۵^۳} - \log_{۳}^{۲^۳\times۵^۳} = ۳\log_{۳}^{۵} + \log_{۳}^{۷} - ۳\log_{۳}^{۲} - ۳\log_{۳}^{۵} = \log_{۳}^{۷} - ۳\log_{۳}^{۲}$

$\log_{۳}^{۷} = \frac{۱}{\log_{۷}^{۳}} = \frac{۱}{۲}$ $\qquad t\log_{۳}^{\frac{۸۷۵}{۱۰۰۰}} = -\log_{۳}^{۷} \Rightarrow t(\frac{۱}{۲}) - ۳t(\frac{۱}{۲}) = -\frac{۱}{۲} \Rightarrow (t-۱)\frac{۱}{۲} = ۳t(\frac{۱}{۲}) \rightarrow ۹t = ۸t+۸$

$t = ۸$ ثانیه

$t = ۸۳$ دقیقه

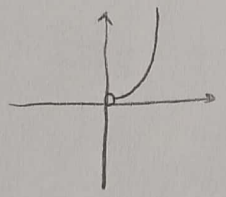
$۱۰۰ - ۶ = ۹۴$ $\qquad \frac{۹۶}{۱۰۰} = \frac{۲۴}{۲۵} \Rightarrow ۱۰۰\times(\frac{۲۴}{۲۵})^t = \frac{۱}{۳}\times۱۰۰ \Rightarrow \log(\frac{۲۴}{۲۵})^t = \log\frac{۱}{۳} \Rightarrow t\log\frac{۲۴}{۲۵} = -\log۳ \Rightarrow \log_{۲۵}^{۲۴} = \log۲۴ - \log۲۵$ (۹)

$\log^{۲^۳\times۳}_{۲^۲\times۵^۲} - \log^{۵^۲}_{۲^۲} = \log۳ + ۳\log۲ - ۲\log۵ = \log۳ + ۳\log۲ - ۲\log\frac{۱۰}{۲} = \log۳ + ۳\log۲ - ۲\log۱۰ + ۲\log۲ = -۰/۲$

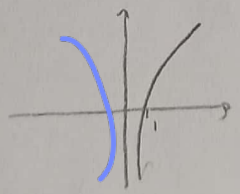
$\Rightarrow -۰/۲t = -۱/۴۰ \Rightarrow t = ۴$ دقیقه

الف) $۹^{\log_{۳}^{x^۲}} = x^{\log_{۳}^{۹}} = x^۲$ $\qquad$ (۱۰)

$\hookrightarrow x > ۰$



ب) $\log x^۲ = ۲\log x$



$D = \mathbb{R} - \{۰\}$

۱۰۷۵