مزانک آتای — تکلیف شماره‌ی ۲۵ — یازدهم دختر C

۱۹,۷۵

.1

$1-\log_c^{(ax-b)} = y \xrightarrow{x=0} 1-\log_c^{-b} = 2 \to -\log_c^{-b}=1 \to \log_c^{-b}=-1 \to -b=\frac{1}{c} \to b=-\frac{1}{c}$

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

$(c+4)(c-1)=0$

$c=+\frac{1}{2}$ ق ق

$c=\frac{4}{2}=-2$ غ ق ق

$y=0 \to 1-\log_c^{(ax-b)}=0 \to \log_c^{ax-b}=1 \to ax-b=\frac{1}{2} \to ax=\ldots \to ax=-\frac{3}{2}$, $b=-2$

$x=-1/5$

$-\frac{3}{2}a=\frac{3}{2} \to a=1$

$(a+c)^b=(\underbrace{1+\frac{1}{2}}_{\frac{3}{2}})x-2=-3$

.2

$f(x)=1+c\times 3^{a+bx} \xrightarrow{x=1} 1+c\times 3^{a+b}=0 \to c\times 3^{a+b}=-1 \to \underbrace{c\times 3^{a}}_{-\frac{1}{3}}\times 3^{b}=-1 \to 3^b=3 \to b=1$

$x=0 \to 1+c\times 3^{a}=\frac{2}{3} \to c\times 3^{a}=-\frac{1}{3}$

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

$f(-1)=1+c\times 3^{a-b}=1+\frac{c\times 3^{a}}{3^{b}} \to 1+\frac{-\frac{1}{3}}{3}=1-\frac{1}{9}=\frac{8}{9}$

.3

$y=c+\log_5^{(ax+b)} \xrightarrow{} x=0 \to c+\log_5^{b}=2 \to \log_5^{b}=2-c \to b=5^{2-c}$

$x=2/4 \to c+\log_5^{ax+b}=0 \to \log_5^{ax+b}=-c \to 5^{-c}=ax+b \to 5^{-c}=ax+5^{2-c} \to 5^{-c}-5^{2-c}=ax \to$

$5^{-c}(\underbrace{1-25}_{-24})=2/4 \to -0/1=5^{-c} \to a=\frac{5^{-c}}{-0/1} \to a=-10\times 5^{-c}$

$\frac{a}{b}=\frac{-10\times 5^{-c}}{5^{2-c}}=-10\times 5^{-c-2+c}=-10\times\frac{1}{25}=-\frac{2}{5}$

.4

$f(x)=\log_4^{(|x^2-2|-x)} \to |x^2-2|-x>0 \to$

$x^2-2>0 \to x^2\geq 2 \to$ ($-\sqrt{2}$, $\sqrt{2}$: $+\ -\ +$)

$x^2-x-2>0 \to (x-2)(x+1)>0 \to$ (-1, 2: $+\ -\ +$) $\} \cap \to x<-\sqrt{2} \cup 2<x$ ①

$x^2-2<0$ ① $\to$ ($-\sqrt{2}$, $\sqrt{2}$: $+\ -\ +$)

$-x^2-x+2>0 \to x=1$, $x=-2$ $\to$ (-2, 1: $-\ +\ -$) $\}$ ②

$① \cap ② \to -\sqrt{2}<x<1$ ②

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

.5

$x=1 \to y=-1-3+8=4 \to f(1)=2+2^{b-a}=4 \to 2^{b-a}=2 \to b-a=1$

$f^{-1}(10)=-1 \to 2+2^{b+a}=10 \to 2^{b+a}=8 \to b+a=3 \to 2b=4$

$\boxed{b=2}$

$\boxed{a=1}$

$4-1=3$

.6

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

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

$B=0 \longleftarrow A=-1$

$f(3) = -2 + \underbrace{(\frac{1}{2})^{\overset{-3}{\cancel{-1\times 3+0}}}}_{8} = 6$

.7

$\frac{1}{6} \cancel{m}_{\text{باقی}} = (\frac{8}{9})^{\overset{\text{ساعت}}{t}} \times \cancel{m}_{\text{باقی}} \longrightarrow \frac{1}{6} = (\frac{8}{9})^t \xrightarrow{\log_5} \log_5 \frac{1}{6} = \log_5 (\frac{8}{9})^t \longrightarrow -\log_5 6 = t(\log_5 8 - \log_5 9)$

$-(\log_5 2 + \log_5 3) = t(3\log_5 2 - 2\log_5 3) \longrightarrow -(\frac{5}{7} + \frac{5}{12}) = t(\frac{15}{12} - \frac{10}{7}) \longrightarrow -5t = \frac{95}{3} \longrightarrow t = \frac{19}{3}$ ساعت

$\times 60$

۳۸۰ دقیقه

$\log_2 5 = 2/4 \longrightarrow \frac{1}{\log_5 2} = 2/4 \longrightarrow \log_5 2 = \frac{\cancel{10}^{5}}{\cancel{24}_{12}} \qquad \log_5 3 = \frac{\cancel{10}^{5}}{\cancel{14}_{7}}$

.8

$\frac{1}{7} m = m \times (\frac{7}{8})^{\overset{\text{هفته}}{t}} \longrightarrow (\frac{7}{8})^t = \frac{1}{7} \xrightarrow{\log_3} t\log_3 \frac{7}{8} = \log_3 \frac{1}{7} \longrightarrow -\log_3 7 = t(\log_3 7 - \log_3 8)$

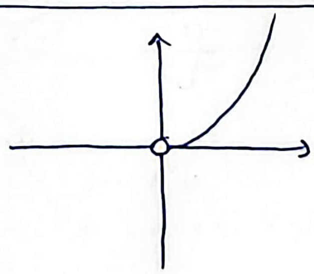
$-\log_3 7 = t(\log_3 7 - 3\log_3 2) \longrightarrow -\frac{5}{3} = t(\frac{5}{3} - \frac{3 \times 5}{8}) \longrightarrow t(\frac{-5}{24}) = -\frac{5}{3} \longrightarrow t = 8 \xrightarrow{\times 7} 56$ روز

هفته

$\log_7 3 = 0/6 \longrightarrow \log_3 7 = \frac{10}{6} = \frac{5}{3} \qquad \log_2 3 = 1/6 \longrightarrow \log_3 2 = \frac{\cancel{10}^{5}}{\cancel{16}_{8}}$

.10

$y = 9^{\log_3 x} \longrightarrow x^{\log_3 9 = 2} = x^2$.



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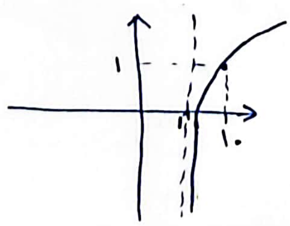
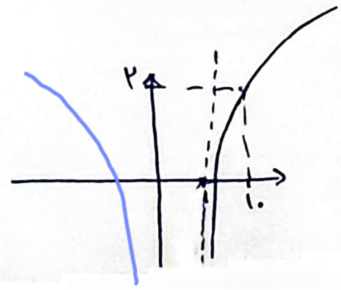
$y = \log x^2 \longrightarrow 2\log x = y \longrightarrow$



$\xrightarrow{\times 2}$



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

$$\frac{\cancel{x}}{3} = \cancel{x}\left(\frac{96}{100}\right)^{t} \longrightarrow \frac{1}{3} = \left(\frac{96}{100}\right)^{t} \longrightarrow \log\frac{1}{3} = t\log\left(\frac{96}{100}\right)$$

$.9$

$$-\log 3 = t\left(\log 96 - \underbrace{\cancel{\log 100}}_{2}\right) \longrightarrow$$

$$-0/48 = t\left(\underbrace{\log 2^{5}}_{5\log 2} + \log 3 - 2\right) \longrightarrow$$

$$-0/48 = t\left(1/5 + 0/48 - 2\right) \longrightarrow t = 24$$