۱۹

نام و نام خانوادگی ....علیا عباسی..... پاسخنامه تشریحی تکلیف شماره ..۲۵.... کلاس ..یازدهم تجربی.......

۱	$(a+c)b=?$ ۱٫۷۵ — $b+c=\frac{-3}{2}$: I , $y=1-\log_c^{(ax-b)}$; $\begin{cases}x=0\\y=2\end{cases} \Rightarrow 2=1-\log_c^{-b} \to \log_c^{-b}=-1 \to c^{-1}=-b \to b=-\frac{1}{c}$ $\xrightarrow{I} -\frac{1}{c}+c=-\frac{3}{2} \xrightarrow{\times 2c} -2+2c^2=-3c$; $2c^2+3c-2=0 \Rightarrow (c+2)(c-\frac{1}{2})=0$; ۱) $c=-2 \to b=\frac{1}{2} \xrightarrow{II} \frac{1}{2}=-\frac{3}{2}a-\frac{1}{2} \to a=1 \to (a+c)b=(1-2)\frac{1}{2}$; ۲) $c=\frac{1}{2} \to b=-2 \xrightarrow{II} \frac{1}{2}=-\frac{3}{2}a+2 \to -\frac{3}{2}=-\frac{3}{2}a \to a=1 \to (a+c)b=(1+\frac{1}{2})(-2)=-3$ جواب ; $\begin{cases}x=-\frac{3}{2}\\y=0\end{cases} \Rightarrow 0=1+\log_c \to c=-\frac{3}{2}a-b$: II	صفحه‌ی لگاریتم — صفحه‌ی تست
۲	$f(-1)=?$ — $f(x)=1+c\times 3^{ax+b} \xrightarrow{x=-1} f(-1)=1+(-1)\times 3^{(-1)(-1)+1}=1-\frac{1}{9}=\frac{8}{9}$ جواب ; $\begin{cases}x=1\\y=0\end{cases} \Rightarrow 0=1+c\times 3^{a+b} \xrightarrow[a=-1]{c=-1} 0=1+(-1)\times 3^{(-1)+b}$, $1=3^{-1+b} \to -1+b=0 \to b=1$; $\begin{cases}x=0\\y=\frac{2}{3}\end{cases} \Rightarrow \frac{2}{3}=1+c\times 3^a \to c\times 3^a=-1\times 3^{-1} \to c=-1$, $3^a=3^{-1} \Rightarrow a=-1$	۶
۳	$\frac{a}{b}=?$ — $y=c+\log_5^{(ax+b)}$; $\begin{cases}x=0\\y=2\end{cases} \Rightarrow 2=c+\log_5^b \to 2-c=\log_5^b \Rightarrow 5^{2-c}=b = 5^2\times 5^{-c}=b \to 5^{-c}=\frac{b}{25}$; $\begin{cases}x=2.4\\y=0\end{cases} \Rightarrow 0=c+\log_5^{2.4a+b} \to -c=\log_5^{2.4a+b} \Rightarrow 5^{-c}=2.4a+b \Rightarrow \frac{b}{25}=2.4a+b$; $-\frac{24}{10}a=\frac{24b}{25} \to \frac{a}{b}=-\frac{2}{5}$	۶
۴	۱٫۵ — $f(x)=\log_2^{(\lvert x^2-2\rvert-x)}$ $D=(-\infty,1)\cup(2,+\infty)$; $\lvert x^2-2\rvert-x>0 \to$ ۱) $x^2-2-x>0 \Rightarrow x^2-x-2>0$, $(x-2)(x+1)>0$, I: $(-\infty,-1)\cup(2,+\infty)$; ۲) $-x^2+2-x>0 \Rightarrow -x^2-x+2>0$, $-1-1+2=0 \to a+b+c=0 \to x=1$, $x=\frac{c}{a}=-2$, II: $(-2,1)$; $D_f=(-2,-1)$ جواب ; $D_f: I\cap II$	
۵	$2b-a=?$ — $f(x)=2+2^{b-ax}$, $g(x)=-x^2-3x+8$, $f^{-1}(10)=-1 \to f(-1)=10$; $\xrightarrow{x=1} f(1)=g(1) \to 2+2^{b-a}=-1-3+8 \Rightarrow 2^{b-a}=2 \to b-a=1$; $x=-1$, $f(-1)=2+2^{b+a}=10 \to 2^{b+a}=2^3 \Rightarrow b+a=3 \to 2b=4 \to b=2, a=1$; $2b-a=2(2)-(1)=4-1=3$ جواب	۶

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

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

$x=2 \Rightarrow -2 + (\frac{1}{2})^{2A+B} = 4-2 \Rightarrow (\frac{1}{2})^{2A+B} = 4 = (\frac{1}{2})^{-2} \Rightarrow 2A+B=-2 \Rightarrow B=0,\ A=-1$

$x=3$: $f(x) = -2 + (\frac{1}{2})^{-x} \Rightarrow f(3) = -2 + (\frac{1}{2})^{-3} = 6$ (جواب) — 1 — 6

$P(t) = A_0 \times a^{\frac{t}{m}}$ (مقدار اولیه، جمعیت باکتری) $\Rightarrow P(t) = \frac{1}{4}A_0 = A_0 \times (\frac{8}{9})^{\frac{t}{1}} \to \frac{1}{4} = (\frac{8}{9})^t$

$a = 1 - \frac{1}{9} = \frac{8}{9}$ $\qquad$ (پایه لگاریتم ۵) $\log_5 (\frac{8}{9})^t = \log_5 \frac{1}{4} \Rightarrow t \log_5 (\frac{8}{9}) = -\log_5 4 \Rightarrow t(-\frac{5}{28}) = -\frac{95}{84}$

$\log_5 4 = \log_5 3 + \log_5 2 = \frac{5}{7} + \frac{5}{12} = \frac{60+35}{84} = \frac{95}{84}$

$\log_3 5 \simeq 1.4 = \frac{7}{5} \to \log_5 3 = \frac{5}{7}$

$\log_2 5 \simeq 2.4 = \frac{12}{5} \to \log_5 2 = \frac{5}{12}$

$\log_5 \frac{8}{9} = \log_5 8 - \log_5 9 = 3\log_5 2 - 2\log_5 3 = \frac{5}{4} - \frac{10}{7} = \frac{35-40}{28} = -\frac{5}{28}$

$\Rightarrow t = +\frac{19}{3}$ — جواب: $t = \frac{19}{3} \times 60 = 380$ (دقیقه) — 7

$P(t) = A_0 \times a^{\frac{t}{m}} \to \frac{1}{7}A_0 = A_0 \times (\frac{7}{8})^{\frac{t}{7}} \to \frac{1}{7} = (\frac{7}{8})^{\frac{t}{7}} \xrightarrow{\log_3} \log_3 (\frac{7}{8})^{\frac{t}{7}} = \log_3 7^{-1}$

$a = 1 - \frac{12.5}{100} = \frac{87.5}{100} = \frac{875}{1000} = \frac{7}{8}$ $\qquad \to \frac{t}{7}\log_3 \frac{7}{8} = -1\log_3 7 \to \frac{t}{7}(\log_3 7 - \log_3 8) = -\log_3 7$

$\log_7 3 = \frac{3}{5} \to \log_3 7 = \frac{5}{3}$

$\log_2 3 = \frac{8}{5} \to \log_3 2 = \frac{5}{8}$

$\frac{t}{7}(\frac{5}{3} - \frac{15}{8}) = -\frac{5}{3} \to \frac{t}{7}(-\frac{5}{24}) = -\frac{5}{3} \to t = 56$ جواب — 1 — 8

$P(t) = A_0 \times a^{\frac{t}{m}} \longrightarrow \frac{1}{3}A_0 = A_0 \times (\frac{96}{100})^{\frac{t}{1}} \to \frac{1}{3} = (\frac{96}{100})^t \xrightarrow{\log_{10}} \log \frac{1}{3} = \log \frac{96}{100} t$

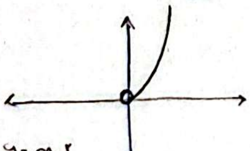
تخفیف حجم هر روز $\frac{96}{100}$ برابر می‌شود — ۱۰۰ لیتر — ۴ لیتر: $\frac{96}{100} = a$ $\qquad \to -\log 3 = t(\log 96 - \log 100)$, $\log 3 = 0.48$

$96 = 2^5 \times 3$ $\qquad -\frac{48}{100} = t(5\log 2 + \log 3 - 2) \to -\frac{48}{100} = t(-\frac{2}{100}) \to t = 24$ روز — 1 — 9

الف) $y = 9^{\log_3 x}$, $x > 0$

$9^{\log_3 x} = x^{\log_3 9} = x^2$

$x > 0$

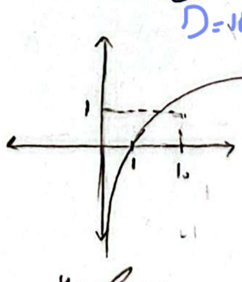


$y = x^2$

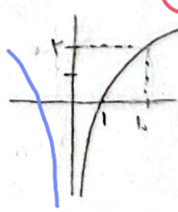
$D_f: (0, +\infty)$

ب) $y = \log x^2 = 2\log x$

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



$y = \log x$ $\xrightarrow{\times 2}$



$y = 2\log x$

1.75 — 10

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