یازدهم پسر A، علی جمالی، تکلیف ۲۵

۱- (۲)

$x=0 \Rightarrow 1-\log_c^{-b}=2 \Rightarrow \log_c^{-b}=-1 \Rightarrow \frac{1}{c}=-b$

$x=-1,5 \Rightarrow 1-\log_{\frac{1}{2}}^{-\frac{3}{2}a+2}=0 \Rightarrow \log_{\frac{1}{2}}^{-\frac{3}{2}a+2}=1 \Rightarrow 2-\frac{3}{2}a=\frac{1}{2} \Rightarrow \boxed{a=1}$ ✓

$b+c=\frac{-3}{2}$

$-\frac{1}{c}+c=\frac{-3}{2} \Rightarrow c^2+\frac{3}{2}c-1=0$

$\Rightarrow (c-\frac{1}{2})(c+2)=0 \xrightarrow{c>0} \boxed{c=\frac{1}{2}} \Rightarrow \boxed{b=-2}$ ✓

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

۲- (۲)

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

$f(0)=1+c\times 3^{a}=\frac{8}{9} \Rightarrow c\times 3^{a}=\frac{-1}{9}$

$\Rightarrow 3^b=3 \Rightarrow \boxed{b=1}$ ✓ $\Rightarrow c\times 3^{a-b}=\frac{-1}{3}$

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

۳- (۲)

$f(2,4)=c+\log_5^{2,4a+b}=0$

$f(0)=c+\log_5^{b}=2$

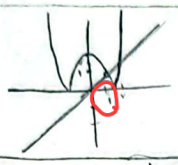
$\Rightarrow \log_5^{\frac{b}{2,4a+b}}=2 \Rightarrow \frac{b}{2,4a+b}=25 \Rightarrow b=60b+60a$

$-24b=60a \Rightarrow \frac{a}{b}=\frac{-24}{60}=\boxed{\frac{-2}{5}}$ ✓

۴- (۱,۷۵)

$|x^2-2|-x>0$

$x\notin[1,2]$



$D_f=(-\infty,1)\cup(2,+\infty)$ ✓

دقت!

۵- (۲)

$x=1 \Rightarrow -1-4+8=2+2^{b-a} \Rightarrow 2=2^{b-a} \Rightarrow b-a=1$

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

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

۶- (۲)

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

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

$\Rightarrow A=-1,\ B=0$

$f(3)=-2+\left(\frac{1}{2}\right)^{3A+B}=-2+\left(\frac{1}{2}\right)^{-3}=-2+8=\boxed{6}$ ✓

۷- (۱,۷۵)

$a\cdot\left(\frac{8}{9}\right)^t=\frac{a}{4} \Rightarrow 4=\left(\frac{9}{8}\right)^t \Rightarrow 1=t\log_{\frac{9}{8}}^{4} \Rightarrow \frac{1}{t}=\frac{\log_2^9}{\log_2^4}-\frac{\log_2^8}{\log_2^4}=\frac{2\left(\frac{1}{1,4}\right)}{\frac{1}{2,4}+\frac{1}{1,4}}-\frac{3\left(\frac{1}{1,4}\right)}{\frac{1}{1,4}+\frac{1}{2,4}}=$

$\frac{\frac{2}{1,4}-\frac{3}{2,4}}{\frac{1}{1,4}+\frac{1}{2,4}}=\frac{\frac{2\times 2,4-3\times 1,4}{(1,4)(2,4)}}{\frac{2,4+1,4}{(1,4)(2,4)}}=\frac{0,6}{3,8}=\boxed{\frac{3}{19}}$ ✓ $\Rightarrow t=\frac{19}{3}\times 12=\cancel{76}$

۳ ساعت $\times 60 = 180$ min

۸- (۱,۵)

هفته $a\cdot\left(\frac{7}{8}\right)^{7t}=\frac{a}{7} \Rightarrow 7=\left(\frac{8}{7}\right)^{7t} \Rightarrow 1=7t\log_7^{8} \Rightarrow \frac{1}{7t}=\log_8^7-1=\frac{1}{8}$

$\log_8^7=\frac{3\log 7}{\log 8}=3\times\frac{\log 3}{\log 8}\times\frac{\log 7}{\log 3}=3\times 0,7\times\frac{1}{1,4}=\frac{9}{8}$ ①

$7t=8 \Rightarrow \boxed{t=\frac{8}{7}}\times 7=8$ هفته $\times$ ۷ روز $=$ روز ۵۶

۹- (۲)

$a\cdot\left(\frac{96}{100}\right)^d=\frac{a}{3} \Rightarrow 3=\left(\frac{100}{96}\right)^d \Rightarrow 1=d\log_3^{\frac{100}{96}} \Rightarrow \frac{1}{d}=2\log_3^{10}-\log_3^{96}=2\left(\frac{1}{0,48}\right)-\frac{33}{7}$

$\log_3^{96}=\frac{\log 96}{\log 3}=\frac{\log 3+5\log 2}{\log 3}=\frac{1+5\frac{\log 2}{\log 3}}{1}=1+5\left(\frac{0,3}{0,48}\right)=\frac{33}{7}$ ①

$\frac{1}{d}=\frac{100}{24}-\frac{33}{7}=\frac{1}{24} \Rightarrow \boxed{d=24}$ ✓

۱۰- (۱)

دامنه رو بایه قبل از تغییر ضابطه حساب کن!

الف) $x^{\log_3^9}=x^2$

ب) $2\log x$

$\log_3^9 \rightarrow D=(0,+\infty)$

$\log_{3^2} \rightarrow D=\mathbb{R}-\{0\}$

-۸

جرم باقی‌مانده $= \frac{m_0}{V} = (\frac{V}{۸})^t m_0 \rightarrow (\frac{V}{۸})^t = \frac{۱}{V}$

$\xrightarrow{\log_۳} t \log_۳^{\frac{V}{۸}} = -\log_۳^V \rightarrow t(\log_۳^V - ۳\log_۳^۲) = -\log_۳^V$

$t(\frac{۱۰}{۴} - ۳\times\frac{۵}{۸}) = -\frac{۱۰}{۴} \rightarrow t = ۸$ هفته $\times V =$ روز ۵۶