۱۹

۱- $f(0)=2 \quad 1-1.5c^{-b}=2 \quad 1.5c^{-b}=-1 \quad \frac{1}{c}=-b$

$f(-1/a)=0 \quad 1-1.5c^{-\frac{2}{2}a-b}=0 \quad -\frac{2}{2}a-b=c \quad -2a=2c+2b=-4$

$a=1$

۱٫۷۵

$b+c=-\frac{3}{2} \quad c-\frac{1}{c}=-\frac{3}{2} \quad \frac{c^2-1}{c}=-\frac{3}{2}$

$2c^2-2=-3c \quad 2c^2+3c-2=0 \quad c^2+\frac{3}{2}c-1=0 \quad (c+2)(c-\frac{1}{2})=0$

$c=\frac{1}{2} \rightarrow b=-2$

$c=-2 \rightarrow b=\frac{1}{2}$ ✗

$(a+c)b=(1+\frac{1}{2})(-2)=-3$ ✓ نصف مقدار اول باید صحیح باشد نمی‌تواند باشد

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

۲-

$f(0)=\frac{5}{4} \quad 1+c\times 4^{a}=\frac{5}{4} \quad c\times 4^{a}=\frac{1}{4}$

$f(1)=0 \quad 1+c\times 4^{a+b}=0 \quad c\times 4^{a+b}=-1$

$4^b=4 \quad b=1$ ✓

$f(-1)=1+c4^{a-b}=1+\frac{c4^a}{4^b}=1-\frac{\frac{1}{4}}{4}=1-\frac{1}{16}=\frac{15}{16}$

۳-

$f(0)=2 \quad c+1.5^{b}_{\omega}=2$

$f(2,2)=0 \quad c+1.5^{2,2a+b}_{c}=0$

$1.5^{b}_{\omega}=1.5^{2,2a+b}_{\omega} \quad 1.5^{\frac{b}{2,2a+b}}_{\omega}=2$

$\frac{b}{2,2a+b}=2\omega \quad 4a+2\omega b=b \quad 4a=-2\omega b$ ✓

$\frac{a}{b}=\frac{-2\omega}{4}=-\frac{\omega}{2}$

۴-

$f(x)=1.5^{|x^2-2|-x}$

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

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

$x^2-2<-x \quad x^2+x-2<0 \quad (x+2)(x-1)<0$

	-2		-1		1		2	
	+	‖	−	‖	−	‖	+	
	+	‖	−	‖	+	‖	+	
	+	‖	−	‖	−	‖	+	

۱۵

$D_f: (-2,-1)$ ✗ $\quad D=(-\infty,1)\cup(2,+\infty)$

۵-

$g(1)=f(1)=-1-2+8=5=2+3^{b-a} \quad 3^{b-a}=3 \quad b-a=1$

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

$b+a=2 \quad b-a=1 \rightarrow 2b=4 \quad b=2 \quad a=1 \rightarrow 2b-a=3$ ✓

۱۵

۶- $f(1)=g(1)=0 = -2+\left(\frac{1}{2}\right)^{A+B}$ $\left(\frac{1}{2}\right)^{A+B}=2$ $A+B=-1$

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

$A=-1$, $B=0$ (۵)

$f(3)=-2+\left(\frac{1}{2}\right)^{-3}=6$

۷- $A=A_0\times\left(\frac{8}{9}\right)^t$ $\frac{1}{4}A_0=A_0\times\left(\frac{1}{9}\right)^t$ $\left(\frac{8}{9}\right)^t=\frac{1}{4}$ $\left(\frac{9}{8}\right)^t=4$

$\log_{\frac{9}{8}}^{4}=\frac{10}{32}=\frac{5}{16}$ $\log_{\frac{9}{8}}^{2}=\frac{10}{16}=\frac{5}{8}$ $\rightarrow \log_{\frac{9}{8}}^{6}=\frac{5}{16}+\frac{5}{8}=\frac{5+10}{16}=\frac{15}{16}$ (۵)

$\left(\frac{8}{9}\right)^t=4 \xrightarrow{\log} t\log_{\frac{9}{8}}^{6}=\log 4$ $t\times\left(\log_{\frac{9}{8}}^{9}+\log_{\frac{9}{8}}^{\frac{1}{4}}\right)=t\left(\frac{10}{8}-\frac{5}{4}\right)$

$\log_{\frac{9}{8}}^{9}-\log_{\frac{9}{8}}^{4}$

$t\left(\frac{30-20}{16}\right)=\frac{30}{16}$ $t=\frac{19}{2}\xrightarrow{\times 40}19\times 20=380$

۸-

$A=A_0\times\left(\frac{7}{8}\right)^{\frac{t}{3}}$ $\frac{1}{2}=\left(\frac{7}{8}\right)^{\frac{t}{3}}$ $\left(\frac{8}{7}\right)^{\frac{t}{3}}=2$ $\xrightarrow{\log}\frac{t}{3}\log_{\frac{8}{7}}^{2}=1$ (۵)

$\frac{t}{3}\left(\log_{\frac{8}{7}}^{8}-\log_{\frac{8}{7}}^{7}\right)=1$ $\log_{\frac{8}{7}}^{8}-\log_{\frac{8}{7}}^{7}=1$ $\frac{t}{3}\left(\frac{6}{3}-1\right)=1$ $\frac{t}{3}=3$ $t=9$

$\log_{\frac{8}{7}}^{4}=\frac{10}{14}=\frac{5}{7}$ $\log_{\frac{8}{7}}^{7}=\frac{5}{\frac{7}{4}}=\frac{20}{7}$

$\log_{\frac{8}{7}}^{2}=\frac{10}{6}=\frac{5}{3}$ $\log_{\frac{8}{7}}^{8}=\frac{5}{\frac{3}{4}}=\frac{20}{3}$

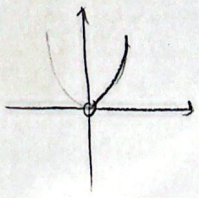
۹- $A=A_0\times\left(\frac{96}{100}\right)^t$ $\frac{1}{3}=\left(\frac{96}{100}\right)^t$ $\xrightarrow{\log}3=\left(\frac{100}{96}\right)^t$ $1=t\times\left(\log_{\frac{96}{100}}^{100}-\log_{\frac{96}{100}}^{3}\right)$

$1=t\left(\log_{\frac{96}{100}}^{25}-\log_{\frac{96}{100}}^{3}-\log_{\frac{96}{100}}^{32}\right)=t\left(\frac{50}{48}-1-\frac{50}{48}\right)=t\left(\frac{50-48-1}{48}\right)$

$\log_{\frac{96}{100}}^{25}=\frac{50}{48}$ $\log_{\frac{96}{100}}^{32}=5\log_{\frac{96}{100}}^{2}=\frac{50}{48}$ $t=24$ روز (۵)

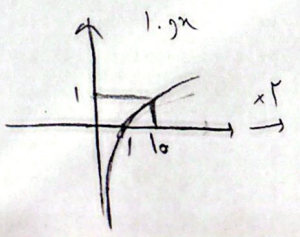
$\log_{\frac{96}{100}}^{3}=\frac{25}{16}=\frac{75}{48}$

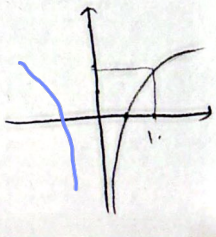
۱۰- الف) $y=9^{\log_3 x}=x^{\log_3 9}=x^2$



ب) $y=10\log_2 x=2\log_2 10\log_2 x$

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





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