۱- $f(0)=2 \to 1-\log_c^{-b}=2 \to \log_c^{-b}=-1$

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

$f(-1/5)=0 \to 1-\log_{\frac{1}{2}}^{(-1/5a+2)}=0 \to \log_{\frac{1}{2}}^{(-1/5+2)}=1$

$-1/5a+2=\frac{1}{2} \to a=1$ ✓ $\quad b(a+c)=-2(1+\frac{1}{2}) \to -3$ ✓

گزینه ۲

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

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

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

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

$f(-1)=1+\frac{1}{3}(-\frac{1}{3})=\frac{5}{9}$ ✓

گزینه ۲ — گزینه $\frac{5}{9}$

۳- $f(0)=2 \to c+\log_5^b=2$

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

$c+\log_5^b-(c+\log_5^{2/4a+b})=2$

$\log_5^b-\log_5^{2/4a+b}=2 \to \log_5^{\frac{b}{2/4a+b}}=2$

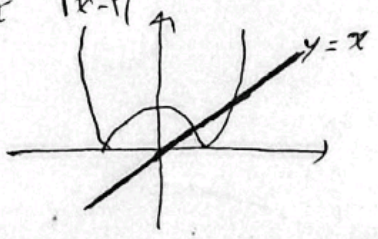
$\frac{b}{2/4a+b}=25 \to b=60a+25b \to$

$60a=-24b \to \frac{a}{b}=\frac{-24}{60}=\frac{-2}{5}$

گزینه ۲

۴- $|x^2-2|-x>0 \to |x^2-2|>x$

$y_2=|x^2-2|$ ، $y_1=x$



$(-\infty,1)\cup(2,+\infty)$ ✓

گزینه ۲

۵- $f(x)=g(x) \xrightarrow{x=1} f(1)=g(1) \Rightarrow f(1)=4$

$2+2^{b-a}=4 \to 2^{b-a}=2^1 \to b-a=1$

$b+a=2$

$b-a=1$, $b+a=2$ $\Rightarrow$ $b=2$ ✓, $a=1$

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

$2b-a \Rightarrow 2(2)-1=3$ ✓

گزینه ۲ — گزینه ۳

۶- $-2+(\frac{1}{2})^{Ax+B}=x^2-x$

$\hookrightarrow x=1: -2+(\frac{1}{2})^{A+B}=1^2-1=0 \to 2^{-A-B}=2 \to -A-B=1$

$x=2: -2+(\frac{1}{2})^{2A+B}=2^2-2=2 \to 2^{-2A-B}=2^2$ $\nearrow A=-1$, $\to B=0$

$f(x)=-2+(\frac{1}{2})^{-x} \to f(2)=-2+(\frac{1}{2})^{-2} \to -2+2^2=2$ ✓

گزینه ۲ — گزینه ۹

Scanned with CamScanner

۹- (۲)

$100 \;،\; 100\left(1-\frac{4}{100}\right) \;،\; 100\left(1-\frac{4}{100}\right)^2$

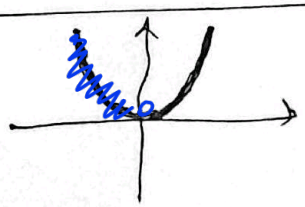
$100\left(1-\frac{4}{100}\right)^n = \frac{1}{2} \times 100 \rightarrow \left(\frac{24}{25}\right)^n = \frac{1}{2}$

$n = \log_{\frac{24}{25}}^{\frac{1}{2}} = \frac{-\log 2}{\log\frac{24}{25}} = \frac{-\log 2}{\log 24 - \log 25}$

$\frac{-\log 2}{5\log 2 + \log 3 - 2} = \frac{-0/48}{5\times 0/3 + 0/48 - 2} = 24$ ← غلظت $\frac{1}{2}$ ← ۲۴ روز ✓

۱۰- (۱/۵)

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



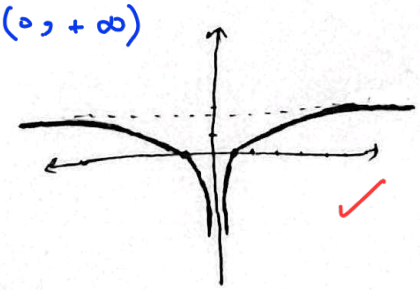
دامنه رو بایه قبل از تغییر ضابطه حساب کن!

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

x	1	10
y	0	2

x	-10	-1
y	2	0

$x < 0$



✓

۷- حجم باقی مانده $= \frac{m_0}{4} = m_0\left(\frac{8}{9}\right)^t \rightarrow \left(\frac{8}{9}\right)^t = \frac{1}{4}$

$\xrightarrow{\log} t\log\frac{8}{9} = \log\frac{1}{4} \rightarrow t(3\log 2 - 2\log 3) = -(\log 3 + \log 2)$

$t = \frac{-(\log 2 + \log 3)}{3\log 2 - 2\log 3} \xrightarrow{\div \log 3} t = \frac{-(\log_3^2 + 1)}{3\log_3^2 - 2} = \frac{-\left(\frac{7}{12} + 1\right)}{3\left(\frac{7}{12}\right) - 2} = \boxed{\frac{19}{3}}$

$\frac{\log_3^5}{\log_2^5} = \frac{\log 2}{\log 3} = \frac{1/4}{2/4} = \frac{7}{12}$

۳۸۰ min = ۶۰ × ساعت

Scanned with CamScanner

-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