نام و نام خانوادگی ......کیمیا عباسی...... پاسخنامه تشریحی تکلیف شماره ...۲۵... کلاس ...11 A...

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$/^{\circ}_{2} \Rightarrow 1-\log_c^{(-b)} = 2 \Rightarrow \log_c^{(-b)} = -1 \Rightarrow c^{-1} = -b \Rightarrow \frac{1}{c} = -b \Rightarrow bc = -1$ ①

و $b + c = -\frac{3}{2}$ ② ①,② $\Rightarrow \begin{cases} b+c = -\frac{3}{2} \\ bc = -1 \end{cases} \Rightarrow b - \frac{1}{b} = -\frac{3}{2} \Rightarrow b^2 + \frac{3}{2}b - 1 = 0 \Rightarrow b = -2 , \frac{1}{2}$ (غ ق ق)

$c = \frac{1}{2}$ و $b=-2$ — غ ق ق چون اگر b>0 باشد c<0 می‌شود و شرط تناقض را از بین می‌برد

$/^{-1.5}_{0} \Rightarrow 1-\log_c^{(-\frac{3}{2}a-b)} = 0 \Rightarrow \log_{\frac{1}{2}}^{(-\frac{3}{2}a+2)} = 1 \Rightarrow -\frac{3}{2}a + 2 = \frac{1}{2} \Rightarrow a = 1$

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

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

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

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

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

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$/^{\circ}_{2} \Rightarrow c + \log_d^{b} = 2 \Rightarrow \log_d^{b} = 2 - c \Rightarrow b = d^{2-c} = d^2 \times d^{-c} \Rightarrow d^{-c} = \frac{b}{25}$

$/^{2.4}_{0} \Rightarrow c + \log_d^{(2.4a+b)} = 0 \Rightarrow \log_d^{(2.4a+b)} = -c \Rightarrow 2.4a + b = d^{-c} \Rightarrow \frac{24}{10}a + b = d^{-c}$

$\xRightarrow{d^{-c} = \frac{b}{25}} 2.4a + b = \frac{b}{25} \Rightarrow \frac{24}{10}a = \frac{-24}{25}b \Rightarrow 25a = -10b \Rightarrow \frac{a}{b} = \frac{-10}{25} = -\frac{2}{5}$

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$|x^2-2| > x$ → $x<0$ به ازای تمامی مقادیر برقرار است ①

$x>0 \Rightarrow |x^2-2| > x \Rightarrow (x^2-2)^2 > x^2 \Rightarrow (x^2-2)^2 - x^2 > 0 \rightarrow (x^2-x-2)(x^2+x-2) > 0$

$(x^2-x-2) = (x+1)(x-2)$ ، $(x^2+x-2) = (x-1)(x+2)$

$\Rightarrow (x+2)(x+1)(x-1)(x-2) > 0$

$x=-2$ غ ق ق ، $x=-1$ غ ق ق ، $x=1$ ✓ ، $x=2$ ✓

$\Rightarrow$ جدول تعیین علامت: $+ \; | \; 1 \; | \; - \; | \; 2 \; | \; +$ $\Rightarrow (-\infty,1)\cup(2,+\infty)$ ②

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

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$g(1) = -1 - 3 + 8 = 4 \Rightarrow /^{1}_{4} \Rightarrow f(1) = 4 \Rightarrow 2 + 2^{b-a} = 4 \Rightarrow b - a = 1$

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

$\Rightarrow b = 2 , a = 1$

$2b - a = 4 - 1 = 3$

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$y = x^2 - x \to \begin{cases} x=1 \to y=0 \to A(1,0) \\ x=2 \to y=2 \to B(2,2) \end{cases}$

$f(x) = -2 + (2)^{-Ax-B} \to \begin{cases} 0 = -2 + 2^{-A-B} \Rightarrow 2 = 2^{-A-B} \Rightarrow -A-B=1 \\ 2 = -2 + 2^{-2A-B} \Rightarrow 4 = 2^{-2A-B} \Rightarrow -2A-B=2 \end{cases} \Rightarrow \begin{matrix} A=-1 \\ B=0 \end{matrix}$ (ی)

$f(3) = -2 + \left(\frac{1}{2}\right)^{-3} = -2 + \left(\frac{1}{2}\right)^{-3} = -2 + 8 = 6$ (ب)

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$f(b) = \frac{A}{\downarrow}\left(\frac{8}{9}\right)^b = \frac{1}{4} A \xrightarrow{\log_5} \log_5^{\left(\frac{8}{9}\right)^b} = \log_5^{4^{-1}} \Rightarrow b \log_5^{\frac{8}{9}} = -\log_5^4$

$\log_5^{\frac{8}{9}} = \log_5^8 - \log_5^9 = 3\log_5^2 - 2\log_5^3 = \left(3 \times \frac{1}{24}\right) - 2\left(\frac{1}{14}\right) = \frac{5}{4} - \frac{1}{7} = \frac{-5}{28}$ (ی)

$\log_5^4 = \log_5^2 + \log_5^3 = \frac{1}{24} + \frac{1}{14} = \frac{5}{12} + \frac{5}{7} = \frac{95}{84}$

$\Rightarrow b\left(\frac{-5}{28}\right) = \frac{-95}{84} \Rightarrow b = \frac{19}{3}$ ساعت $\Rightarrow \frac{19}{3} \times 60 = 19 \times 20 = 380 \min$

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جرم باقیمانده $= \left(1 - \frac{1}{8}\right)^{\frac{t}{5}} \times M = \left(\frac{7}{8}\right)^{\frac{t}{5}} M$ و $\left(\frac{7}{8}\right)^{\frac{t}{5}} M = \frac{1}{2} M \Rightarrow \left(\frac{7}{8}\right)^{\frac{t}{5}} = \frac{1}{2}$ (جرم اولیه)

$\xrightarrow{\log_3} \log_3^{\left(\frac{7}{8}\right)^{\frac{t}{5}}} = \log_3^{\frac{1}{2}} \Rightarrow \frac{t}{5}\log_3^{\frac{7}{8}} = -1 \Rightarrow \frac{t}{5}\left(\log_3^7 - \log_3^8\right) = -\log_3^2$ (ی)

$\left(\log_3^8 = \frac{1}{\log_2^3} = \frac{1}{\frac{1}{2}\log_2^2} = \frac{10}{7} \to \log_3^8 = \frac{10}{7}\right) \Rightarrow \frac{t}{5}\left(\frac{10}{7} - \frac{10}{7}\right) = -\frac{10}{9}$

$\Rightarrow \frac{t}{5}\left(\frac{-10}{7}\right) = \frac{-10}{9} \Rightarrow t = 45$ روز

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اگر هر روز 4 لیتر از آن را به داریم غلظت آن را $\frac{24}{25}$ برابر می‌کنیم و بعد از n روز غلظت آن $\left(\frac{24}{25}\right)^n$ برابر می‌شود که باید با $\frac{1}{3}$ برابر برگزاریم:

$\left(\frac{24}{25}\right)^n = \frac{1}{3} \Rightarrow \left(\frac{25}{24}\right)^n = 3 \xrightarrow{\log} \log\left(\frac{25}{24}\right)^n = \log 3 \Rightarrow n \log\frac{25}{24} = \log 3$

$\Rightarrow n(\log 25 - \log 24) = \log 3 \Rightarrow n(\log 5^2 - \log(3 \times 8)) = \log 3 \Rightarrow n(2\log_5 - (3\log 2 + \log 3)) = \log 3$ (ی)

$\Rightarrow n(2 \times 0/7 - (3 \times 0/3 + 0/47)) = 0/47 \Rightarrow n(1/4 - 1/37) = 0/47 \Rightarrow n \times 0/03 = 0/47 \Rightarrow n = 24$

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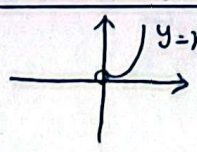
الف) (ی)

$y = x^{\log_3^9} = x^2$ و $x > 0 \Rightarrow$



ب)

$y = \underbrace{\log x^2}_{2\log|x|} \Rightarrow x^2 > 0 \Rightarrow x \neq 0 \Rightarrow D = R - \{0\}$