نام و نام خانوادگی ....مهدی ابوفاضلی........ پاسخنامه تشریحی تکلیف شماره ۲۵ کلاس ....یازدهم ریاضی A....

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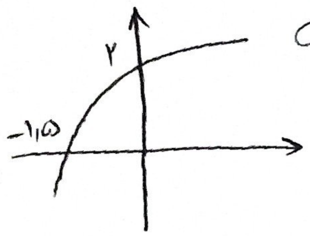

$y = 1 - \log_c^{(ax-b)} \longrightarrow \begin{cases} f(0)=2 \\ 1-\log_c^{-b} = 2 \longrightarrow \log_c^{-b} = -1 \longrightarrow \frac{1}{c} = -b \end{cases} \Rightarrow \boxed{-bc=1}$

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

$(a+c)b = ?$ $\longrightarrow \begin{cases} f(-1.5) = 0 \\ 1-\log_c^{-1.5a-b} = 0 \longrightarrow \log_c^{-(1.5a+b)} = 1 \end{cases}$

$-1.5a - b = c$

$-1.5a = b+c = -\frac{3}{2} \longrightarrow \boxed{a=1}$

$\begin{cases} b+c = -\frac{3}{2} \\ bc = -1 \end{cases} \quad \begin{matrix} b=-2 \\ c=\frac{1}{2} \end{matrix} \longrightarrow \begin{matrix} (a+c)b \\ (1-\frac{1}{2})(-2) = 1 \end{matrix}$

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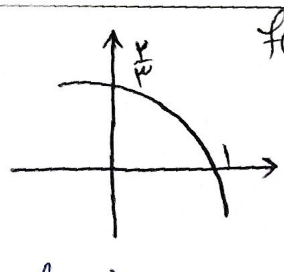

$f(x) = 1 + c \times 3^{a+bx} \longrightarrow \begin{cases} f(1) = 0 \longrightarrow 1 + 3^{a+b} \times c = 0 \\ f(0) = \frac{2}{3} \longrightarrow 1 + c \cdot 3^a = \frac{2}{3} \end{cases}$

$f(-1) = ?$

$\Longrightarrow \begin{cases} c \times 3^a \times 3^b = -1 \\ c \cdot 3^a = -\frac{1}{3} \end{cases} \xrightarrow{\text{تقسیم}} 3^b = 3 \longrightarrow \boxed{b=1}$

$f(-1) = 1 + \underbrace{c \times 3^a}_{-\frac{1}{3}} \times 3^{bx} \xrightarrow[x=-1]{b=1} 1 + (-\frac{1}{3}) \cdot (\frac{1}{3}) = 1 - \frac{1}{9} = \frac{8}{9}$

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$y = c + \log_5^{(ax+b)} \longrightarrow \begin{cases} 2 = c + \log_5^{b} \\ 0 = c + \log_5^{(2.4a+b)} \end{cases} \longrightarrow \log_5^{(2.4a+b)} - \log_5^{b} = -2$

$\frac{a}{b} = ?$ $\log_5^{\frac{2.4a+b}{b}} = -2 \longrightarrow \frac{2.4a+b}{b} = 5^{-2} \longrightarrow \frac{2.4a+b}{b} = \frac{1}{25} \quad 2.4\frac{a}{b} + 1 = \frac{1}{25}$

$\frac{a}{b} = \frac{\overset{-24}{\cancel{+1-25}}}{25} \times \frac{10}{24} = -\frac{10}{25} = \frac{-2}{5}$

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$f(x) = \log_4^{(|x^2-2|-x)} \longrightarrow |x^2-2| - x > 0$ / قدرمطلق $+ \longrightarrow x^2 - x - 2 > 0$

	-1		2	
+		−		+

(I)

قدرمطلق $- \longrightarrow -x^2 - x + 2 > 0$

	-2		1	
−		+		−

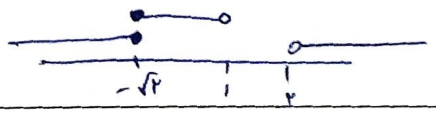
(II)

$\log_b^a \longrightarrow \begin{cases} a > 0 \\ b > 0 \\ b \neq 1 \end{cases}$

قدرمطلق $+ \longrightarrow x^2 > 2 \xrightarrow{\text{I}'} \begin{cases} x > \sqrt{2} \\ x < -\sqrt{2} \end{cases}$ $\quad \text{I} \cap \text{I}' \longrightarrow (-\infty, -\sqrt{2}) \cup (2, +\infty)$

قدرمطلق $- \longrightarrow x^2 < 2 \;\; \text{II}' \longrightarrow -\sqrt{2} < x < \sqrt{2}$ $\quad \text{II} \cap \text{II}' \longrightarrow (-\sqrt{2}, 1)$

$\overset{\cup}{\Longrightarrow}$



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

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$f(x) = 2 + 2^{b-ax}$

$g(x) = -x^2 - 3x + 8$

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

$\Longrightarrow 2^{b-a} = 2 \longrightarrow \boxed{b-a=1}$

$f^{-1}(10) = -1 \longrightarrow f(-1) = 10 \longrightarrow 2 + 2^{b+a} = 10 \longrightarrow 2^{b+a} = 8 \longrightarrow \boxed{b+a=3}$

$2b - a = ?$

دستگاه $\longrightarrow \begin{cases} b+a = 3 \\ b-a = 1 \end{cases} \xrightarrow{+} 2b = 4 \longrightarrow \begin{cases} b = 2 \\ a = 1 \end{cases} \longrightarrow 2b - a = 4 - 1 = 3$

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

$y = x^2 - x \longrightarrow$ تقاطع $\begin{cases} x_1 = 1 \\ x_2 = 2 \end{cases} \xrightarrow{x^2-x} \begin{cases} y_1 = 0 \\ y_2 = 2 \end{cases}$

$f(3) = ?$

$\begin{cases} f(1)=0 \longrightarrow -2+\left(\frac12\right)^{A+B}=0 \longrightarrow 2^{-A-B}=2 \\ f(2)=2 \longrightarrow -2+\left(\frac12\right)^{2A+B}=2 \longrightarrow 2^{-2A-B}=4 \end{cases} \longrightarrow \begin{cases} -A-B=1 \\ -2A-B=2 \end{cases}$ 6

$\Longrightarrow -A=1 \longrightarrow \begin{cases} A=-1 \\ B=0 \end{cases} \longrightarrow f(3) = -2+\left(\frac12\right)^{-x} = -2+\left(\frac12\right)^{-3} \longrightarrow 8-2=6$

$\xrightarrow[-\frac19]{1h} \frac89 \xrightarrow[-\frac19]{1h} \frac89 \times \frac89 \xrightarrow{1h} \left(\frac89\right)^3 \longrightarrow \dots\dots \longrightarrow \frac14$

هر ساعت ضرب در $\frac89$ می‌شود

$\log_2 5 \simeq 2.4$

$B(t) = B_0\left(\frac89\right)^t \longrightarrow \frac{B_0}{4} = B_0\left(\frac89\right)^t \longrightarrow \left(\frac89\right)^t = \frac14$ 7

$\log_3 5 \simeq 1.4 \Longrightarrow \log_5\left(\frac89\right)^t = \log_5 \frac14 \longrightarrow t\log_5\left(\frac89\right) = -\log_5 4 \longrightarrow \log_b a = \frac{\log_c a}{\log_c b}$

$\Longrightarrow \frac{-\log_5 4}{\log_5 8/9} = \frac{-\log_5 4}{\log_5 8 - \log_5 9} = \frac{-\left(\frac{5}{12}+\frac{5}{7}\right)}{\left(-\frac{10}{7}+\frac{5}{4}\right)} \longrightarrow \frac{19}{3} = 6.3$

$12.5\% = \frac18 \longrightarrow B(t) = B_0\left(\frac78\right)^{t/7} \longrightarrow \frac17 B_0 = B_0\left(\frac78\right)^{t/7} \longrightarrow \left(\frac78\right)^{t/7} = \frac17$

$\xrightarrow{\text{1 هفته}} \frac78 \xrightarrow{\text{1 هفته}} \frac78 \times \frac78 \longrightarrow \dots\dots \longrightarrow \frac17$

$\log_7 3 \simeq 0.6 \qquad \log_3\left(\frac78\right)^{t/7} = \log_3\left(\frac17\right) \longrightarrow \frac t7 \log_3\left(\frac78\right) = \log_3\left(\frac17\right) \longrightarrow \frac t7\left(\log_3 7 - \log_3 8\right) = -\log_3 7$ 8

$\log_3 7 = \frac53 \longrightarrow \frac t7\left(\log_3 7 - 2\log_3 2\right) = -\log_3 7 \longrightarrow \frac t7\left(\frac53 - 3\times\frac58\right) = -\frac53$

$\log_2 3 \simeq 1.6 \qquad \log_3 2 = \frac58$

$\Longrightarrow \frac t7\left(\frac{40-45}{24}\right) = -\frac53 \longrightarrow \frac t7\left(-\frac{5}{24}\right) = -\frac53 \Longrightarrow \frac{t}{56} = 1 \longrightarrow t = 56$

$100\ lit$

* غلظت محلول هر روز $\frac{94}{100}$ می‌شود.

$100\ lit \longrightarrow 94\ lit + 4 \longrightarrow 92\ lit + 8 \longrightarrow \dots\dots \longrightarrow$

غلظت اولیه $\longrightarrow x$

$\log 2 \simeq 0.3$

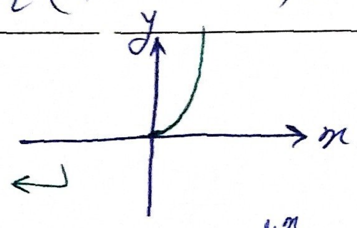
$f(t) = x\cdot\left(\frac{94}{100}\right)^t \longrightarrow \frac x3 = x\left(\frac{94}{100}\right)^t \longrightarrow \left(\frac{94}{100}\right)^t = \frac13$ 9

$\log 3 \simeq 0.48 \Longrightarrow \log\left(\frac{94}{100}\right)^t = \log\frac13 = t\left(\log 94 - \log 100\right) = -\log 3 \longrightarrow t\left(\log 2^5 + \log 3 - 2\right) = -\log 3$

$\Longrightarrow t\left(5(0.3) + 0.48 - 2\right) = -0.48 \longrightarrow t\left(1.5 + 0.48 - 2\right) = -0.48 \longrightarrow -0.02t = -0.48$

$t = 24$

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



← xهای منفی در دامنه تابع نیست!

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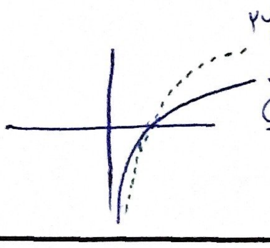
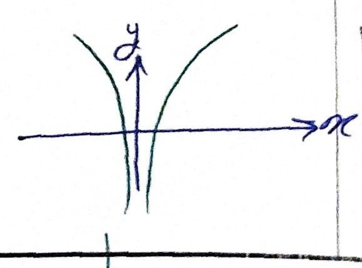
ب) $y = \log x^2 = 2\log x \longrightarrow \log x :$



$\Longrightarrow 2\log x :$



$\longrightarrow x^2 > 0 \longrightarrow \mathbb{R} \longrightarrow$ دامنه این تابع منفی نیز می‌تواند باشد.