۱۴,۲۵

نام و نام خانوادگی ......حسین بلکرین‌خواه...... پاسخنامه تشریحی تکلیف شماره ..۲۵.. کلاس ......یازدهم (A)......

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$y = -\log_c^{(ax-b)} + 1$

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

$(a+c)b = ?$

$ab + cb = ab - 1 = b - 1$

$b = -2 \longrightarrow -2 - 1 = \boxed{-3}$

$x = 0 \to y = 2 : -\log_c^{-b} + 1 = 2 \to \log_c^{-b} = -1 \to -b = \frac{1}{c} \Rightarrow c = \frac{-1}{b} \Rightarrow \boxed{bc = -1}$

$x = \frac{-3}{2} \to y = 0 : -\log_c^{\frac{-3a}{2} - b} + 1 = 0 \to \log_c^{\frac{-3a}{2} - b} = 1 \longrightarrow \frac{-3}{2}a - b = c$

$\xrightarrow{b+c=\frac{-3}{2}} \frac{-3}{2}a = \ldots \to \frac{-3}{2}a = \frac{-3}{2} \to \boxed{a = 1}$

$b + c = \frac{-3}{2} \to b + \frac{-1}{b} = \frac{-3}{2} \longrightarrow \boxed{b = -2}$ $\boxed{\cancel{b = \frac{1}{2}}}$ غ ق

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$f(x) = C \times 3^{a+bx} + 1$

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

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

$x = 0 \to y = \frac{2}{3} : 1 + C \times 3^a = \frac{2}{3} \to \boxed{C \times 3^a = \frac{-1}{3}}$

$x = 1 \to y = 0 : 1 + C \times 3^{a+b} = 0 \to \boxed{C \times 3^{a+b} = -1}$

$\frac{C \times 3^{a+b}}{C \times 3^a} = 3 \Rightarrow 3^b = 3 \Rightarrow \boxed{b = 1}$

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$y = C + \log_5^{(ax+b)} \longrightarrow \begin{cases} x = 0 \to y = 2 : & C + \log_5^b = 2 \\ x = 2.4 \to y = 0 : & C + \log_5^{2.4a+b} = 0 \end{cases}$

$C + \log_5^b - C - \log_5^{2.4a+b} = 2 \Rightarrow \log_5^{\frac{b}{2.4a+b}} = 2 \Rightarrow \frac{b}{2.4a+b} = 25$

$\frac{a}{b} = ? = \frac{-10}{25} = \frac{-2}{5}$

$\frac{2.4a+b}{b} = \frac{1}{25} \to \frac{2.4a}{b} = \frac{1}{25} - 1 \Rightarrow \frac{2.4a}{b} = \frac{-24}{25} \Rightarrow \boxed{\frac{a}{b} = \frac{-10}{25}}$

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$f(x) = \log_4^{(|x^2-2| - x)}$

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

$|x^2 - 2| > x$

$x^2 - 2 > x \to x^2 - x - 2 > 0 \Rightarrow$ x: -1, 2: $+ \; - \; +$ $\to (-\infty, -1) \cup (2, +\infty)$ ①

$x^2 - 2 < -x \to x^2 + x - 2 < 0 \Rightarrow$ x: 1, 2: $+ \; - \; +$ $\to (1, 2)$ ②

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

$① \cup ② \longrightarrow \mathbb{R} - \{[-1, 1], \{2\}\}$

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

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$f(x) = 2 + 2^{b-ax} \xrightarrow{x=1} f(x) = 2 + 2^{b-a} = 4 \to 2^{b-a} = +2 \to \boxed{b - a = 1}$

$g(x) = -x^2 - 3x + 8 \xrightarrow{x=1} g(x) = -1 - 3 + 8 = 4$

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

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

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$$f(x) = \left(\frac{1}{2}\right)^{Ax+B} - 2 \quad \begin{cases} x=1 \to \left(\frac{1}{2}\right)^{A+B} - 2 = 0 \to \left(\frac{1}{2}\right)^{A+B} = 2 \to \boxed{A+B=-1} \\ x=2 \to \left(\frac{1}{2}\right)^{2A+B} - 2 = 2 \to \left(\frac{1}{2}\right)^{2A+B} = 4 \to \boxed{2A+B=-2} \end{cases}$$

$$y = x^2 - x \quad \begin{cases} x=1 \to y=0 \\ x=2 \to y=2 \end{cases}$$

$$\begin{cases} A+B=-1 \\ 2A+B=-2 \end{cases} \Rightarrow A=-1,\ B=0$$

$$f(3) = \left(\frac{1}{2}\right)^{3A+B} - 2 = \left(\frac{1}{2}\right)^{3(-1)+0} - 2 = \left(\frac{1}{2}\right)^{-3} - 2 = 8-2 = 6$$

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$$\frac{1}{6}x = x \times 2^{-\frac{1}{9}t} \to (2^{-\frac{1}{9}})^t = 6^{-1} \to \log_{2^{-1/9}} 6^{-1} = t \Rightarrow 9\log_2 6 = t$$

$$9\,\frac{\log_5 6}{\log_5 2} = t \to 9\,\frac{\log_5 2 + \log_5 3}{\log_5 2} = t \to 9\,\frac{\frac{1}{\log_2 5} + \frac{1}{\log_3 5}}{\frac{1}{\log_2 5}} = 9\,\frac{\frac{10}{24} + \frac{1}{14}}{\frac{10}{24}} = 9\,\frac{\frac{5}{12} + \frac{5}{7}}{\frac{5}{12}}$$

$$9\,\frac{\frac{7\times5 + 12\times5}{84}\times12}{5} = 9\,\frac{\frac{5\times19}{\cancel{84}}\times\cancel{12}}{5} = 9\,\frac{\cancel{5}\times19}{\cancel{5}\times7} = \frac{9\times19}{7}\,h \sim \frac{9\times19}{7}\times60\ min = 1465.7\ min$$

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$$\frac{12.5}{100} = \frac{1}{8} \quad / \quad \frac{1}{7}\cancel{x} = \cancel{x} \times 2^{-\frac{1}{8}\times t} \to \log_{2^{-1/8}}^{1/7} = t \to \frac{-1}{\frac{-1}{8}}\log_2 7 = t \to 8\log_2 7 = t$$

$$8\log_2 7 = 8 \times \frac{\log_3 7}{\log_3 2} = 8\times\frac{\log_2 3}{\log_7 3} = \frac{1.6}{0.6}\times 8 = \frac{16}{6}\times8 \text{ هفته } = \frac{16}{6}\times8\times7 \text{ روز } = 149.\overline{3} \text{ روز}$$

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$$\frac{1}{3} = 1\times 2^{\frac{-4t}{100}} \sim \left(2^{\frac{-4}{100}}\right)^t = \frac{1}{3} \to \log_{2^{-4/100}}^{1/3} = t$$

$$\frac{-1}{\frac{-4}{100}} \times \log_2 3 = t \sim 25\log_2 3 = t \Rightarrow 25\times\frac{\log 3}{\log 2} = 25\times\frac{0.48}{0.3} = 25\times1.6 = 40 \text{ سال}$$

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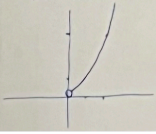
الف)

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

$D(y) = \boxed{x>0}$



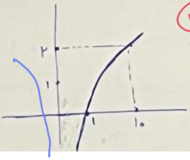
ب)

$$y = \log_{10} x^2 \qquad 10>1 \to \text{صعودی}$$

$D(y) = x^2 > 0 \to x \neq 0$

$$y = 2\log_{10} x$$

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



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$$\left(\frac{۸}{۹}\right)^t = \frac{۱}{۶} \qquad \log\left(\frac{۸}{۹}\right)^t = \log\frac{۱}{۶} \rightarrow t(\log ۸ - \log ۹) = -(\log^{۳} + \log^{۲})$$

$$\rightarrow t = \frac{-(\log^{۲} + \log^{۳})}{۳\log^{۲} - ۲\log^{۳}}$$

$$\begin{cases} \log_{۲}^{۵} \\ \log_{۳}^{۵} \end{cases} \rightarrow \log_{۳}^{۲} = \frac{۷}{۱۲}$$

$$\div \log^{۳} \qquad t = \frac{۱۹}{۳} \qquad \frac{۱۹}{۳} \times ۶۰ = ۳۸۰$$

$$۸)\ \left(\frac{۷}{۸}\right)^t = \frac{۱}{۷} \qquad \log_{۳}\left(\frac{۷}{۸}\right)^t = \log_{۳}\frac{۱}{۷} \rightarrow t(\log_{۳}^{۷} - \log_{۳}^{۸}) = -\log_{۳}^{۷}$$

$$t\left(\frac{۱۰}{۶} - ۳\times\frac{۵}{۸}\right) = -\frac{۱۰}{۶} \rightarrow t = ۸ \qquad ۸\times ۷ = ۵۶$$

$$۹)\ (۰٫۹۶)^n = \frac{۱}{۳} \qquad \log(۰٫۹۶)^n = \log\frac{۱}{۳} \rightarrow n = \frac{-\log^{۳}}{\log^{۹۶} - \log^{۱۰۰}}$$

$$n = \frac{-\log^{۳}}{\log(۲^{۵}\times ۳) - ۲} = ۲۴$$