نام و نام خانوادگی ......ترنم ایران....... پاسخنامه تشریحی تکلیف شماره ..۲۳.. کلاس ....A............

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$\log_n^m = a$

$\log_{mn}^{m^2n} = b \to b = \frac{\log_n^{m^2n}}{\log_n^{mn}} \Rightarrow \frac{\log_n^{m^2}+\cancel{\log_n^n}^{\,1}}{\log_n^m+\cancel{\log_n^n}^{\,1}} = \frac{2\log_n^m+1}{\log_n^m+1} = \frac{2a+1}{a+1}$

$b = \frac{2(a+1)-1}{a+1} = 2 - \underbrace{\frac{1}{a+1}}_{\text{بین ۰ و ۱}} \Rightarrow 2 - \underset{\text{بین ۰ و ۱}}{x} = 1<b<2 \Rightarrow [b]=1$

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الف) $y=\sqrt{\frac{x}{\log_{1/2}^x}} \xrightarrow{\text{کل عبارت}} \geq 0$ و $\log_{(1/2)}^x > 0$

$x>0$

$\log_{1/2}^x \neq 0 \to x \neq (1/2)^0 \to x \neq 1 \to x < 1/2$

$\Rightarrow \boxed{x \geq 0}$

ب) $y=\frac{\log_4^{(x^2-x-2)}}{\sqrt{x^2-1}+1}$

$(x^2-x-2)>0 \to (x-2)(x+1)>0$ ، $\begin{array}{ccccc} & -1 & & 2 & \\ + & & - & & + \end{array} \to x>2,\ x<-1$

مخرج همیشه ایجاد ← $\sqrt{x^2-1}+1 \to x^2-1\geq 0 \to x^2\geq 1 \to x\geq 1,\ x\leq -1$

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

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$2\log_x^a + \log_a^{\sqrt{x}} = 2$

$x=9$

$\to \underbrace{2\log_9^a}_{2(\frac{1}{2}\log_3^a)=\log_3^a} + \log_a^3 = 2$

$\overset{t}{\log_3^a} + \underbrace{\log_a^3}_{\frac{1}{\log_3^a}} = 2$

$\Rightarrow t+\frac{1}{t}=2 \to \frac{t^2+1}{t}=2 \to t^2-2t+1=0 \to \boxed{t=1}$ و $\log_3^a = 1 \to a=3^1 \Rightarrow \boxed{a=3}$

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$\log 2 = 0/3$ و $\log 3 \simeq 0/4 \to \log 5 = \log 10 - \log 2 = 1-0/3 = 0/7$

$[\log^{5/3}]x^2 + (\log 9)x - \log 15 = 0$

$\log^{3^2} \to 2\log 3 = 2(0/4) = 0/8$

$\log 5 - \log 3 = 0/7-0/4 = 0/3$

$-\log 15 = -(\log 3+\log 5) = -1/1$ ، $\times 10$

$3x^2+8x-11=0 \xrightarrow{a+b+c=0} x_1=1$ و $\underbrace{x_2=\frac{c}{a}}_{-\frac{11}{3}} \Rightarrow 1-(-\frac{11}{3}) = \frac{3+11}{3} = \frac{14}{3}$

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$\log_2^7 = 2/8$ و $\log_5^2 = 0/5 \xrightarrow[\text{می‌گیریم}]{\text{برعکسش (۲)}} \frac{1}{\log_5^2} = \frac{1}{0/5} = 2 = \log_2^5$

$\log_{14}^{10} = ? \to \frac{\log_2^{10}}{\log_2^{14}} = \frac{\log_2^{(2\times5)}}{\log_2^{(2\times7)}} = \frac{\log_2^2+\log_2^5}{\log_2^2+\log_2^7} = \frac{1+2}{1+2/8} = \frac{3}{3/8}\times\frac{10}{10} = \frac{30}{38} = \frac{15}{19} \simeq 0/78$

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۲ الف)

$\frac{x}{\log_{1/2}^x}\geq 0 \to \log_2^x<0 \to x<2^0=1 \to \begin{cases} x>0 \\ x<1 \end{cases} \to 0<x<1$

$\log_3 5 = 1.5$, $\log_2 3 = 1.6 \to \frac{1}{\log_2 3} = \frac{1}{1.6} \overset{\times 10}{\underset{\times 10}{=}} \frac{10}{16} = 0.625 = \log_3 2$

$\log_{15} 6 = ? \to \frac{\log_3 6}{\log_3 15} = \frac{\log_3 2 + 1}{\log_3 5 + 1} = \frac{0.625 + 1}{1.5 + 1} = \frac{1.625}{2.5}\frac{\times 1000}{\times 1000} = \frac{1625}{2500} = \frac{65}{100} = 0.65$ 6

$\log_8 18 = m \to \log_{2^3} 18 = m \Rightarrow \frac{1}{3}\log_2 18 = m \to \underbrace{\log_2 18}_{2\times 3^2} = 3m$

$\log_2 (2\times 3^2) = 3m \to \underbrace{\log_2 2 + \log_2 3^2}_{} = 3m$

$\log_4 12 \to \frac{\log_2 12}{\log_2 4} = \frac{\log_2 12}{2} \to 2^2\times 3 = \frac{\log_2 2^2 + \log_2 3}{2}$

$1 + 2\log_2 3 = 3m$

$2\log_2 3 = 3m - 1$

$\hookrightarrow \log_2 3 = \frac{3m-1}{2}$ 7

$\hookrightarrow \frac{2 + \log_2 3}{2} = \frac{2 + \left(\frac{3m-1}{2}\right)}{2} = \frac{\frac{4 + 3m - 1}{2}}{2} = \frac{3m+3}{4}$

$(0.4)^{2x-1} = \left(\frac{125}{8}\right)^{x^2} \Rightarrow \left(\frac{2}{5}\right)^{2x-1} = \left(\left(\frac{5}{2}\right)^3\right)^{x^2} \to \underbrace{\left(\frac{2}{5}\right)^{2x-1} = \left(\frac{5}{2}\right)^{3x^2}}$

$\frac{4}{10} = \frac{2}{5}$ $\hookrightarrow \frac{5^3}{2^3} = \left(\frac{5}{2}\right)^3$

$\log_8 (9x+1)$

$\left(\frac{5}{2}\right)^{-(2x-1)} = \left(\frac{5}{2}\right)^{3x^2}$

$\hookrightarrow \log_8 4 \to \log_{2^3} 2^2 = \frac{2}{3}\log_2 2 = \frac{2}{3}$

$\hookrightarrow 3x^2 = -2x + 1$ 8

$\hookrightarrow 3x^2 + 2x - 1 = 0$

$\hookrightarrow x_1 = -1$, $x_2 = \frac{1}{3}$

* با Log ⊖ نداریم. ⇐ غ ق ق × ‌ ‌ ‌ √ ق ق

$\log_{2\sqrt{2}} b = \frac{2}{3}(1+a)$, $\log_2 3 = a$

$\log (12b - 8)$ $\hookrightarrow \frac{1}{\cancel{\frac{3}{2}}}\log_2 b = \frac{2}{\cancel{3}}(1+a) \to \log_2 b = \underbrace{2(1+a)}$

$2(\cancel{1} + \log_2 3) \to 2(\log_2 6) \Rightarrow$

$\log_2 2$

$\hookrightarrow \log^{(108-8)} = \log^{100} = 2$ 9

$\log_2 b = \log_2 6^2 = \log_2 36 \to \boxed{b = 36}$

$-4ax^2 + bx + \frac{1}{2}c = 0 \to \frac{1}{S} = \log 4$, $b + c = 2a \to \frac{2a \pm b + c}{a} \Rightarrow 2 = \frac{b+c}{a}$

$\left[\frac{1}{\sqrt[8]{2}}\right]^{\frac{c}{a}} \Rightarrow 2^{-\frac{1}{8}\times \cancel{2}\log_2 5} = 2^{\log_2 \sqrt[4]{5}} = \sqrt[4]{5}$ 10

$\Rightarrow S = -\frac{b}{-4a} = \frac{b}{4a} \to \log 4 = \frac{1}{\frac{b}{4a}} \Rightarrow \log 4 = \frac{4a}{b} \Rightarrow \cancel{2}\log 2 = \frac{\cancel{4}a}{b} \to \frac{1}{2}\times\frac{1}{\log_2 10} = \frac{a}{b}$

$\frac{b}{a} = 2\log_2 10$, $\frac{c}{a} = 2 - 2\log_2 10 \Rightarrow 2 - 2(\log_2 5 + \log_2 \cancel{2}) \Rightarrow c/a = -2\log_2 5$