کلاس: یازدهم دختر A　　　شماره تکلیف: 23　　　نام: فاطمه شیخی

$n^a = m$

$\log_{m^1 m^a} m^2 m^a = b \Rightarrow \log_{m^{1+a}} m^{2+a} = b \rightarrow \frac{2+a}{1+a}\log_m m = b \Rightarrow \frac{2+a}{1+a} = b \Rightarrow$ 1

$[b] = \left[\frac{1+1+a}{1+a}\right] = 1 + \left[\underbrace{\frac{1}{a+1}}_{0}\right] \xrightarrow{a>0} [b] = 1$

الف) $\frac{x}{\log_{\frac{1}{2}} x} \ge 0$ ($0 = x$, $1 = x$) $\Rightarrow$ ① $x > 0$ (شرط لگاریتم) ② (0: ×, +; 1: −) $\rightarrow$ ①∩② $= D_y = (0,1)$

ب) ① $x^2 - x - 2 > 0 \Rightarrow (x-2)(x+1) > 0 \rightarrow (-\infty,-1)\cup(2,+\infty)$ 2

② $\sqrt{x^2-1} \rightarrow x^2 - 1 \ge 0 \Rightarrow (-\infty,-1)\cup(1,+\infty)$　　①∩② $= (-\infty,-1)\cup(2,+\infty)$

$2\log_{3^2} a + \log_a 3 = 2 \Rightarrow \log_3 a + \log_a 3 = 2 \Rightarrow \underbrace{\log_3 a}_{t} + \frac{1}{\log_3 a} = 2 \Rightarrow t^2 - 2t + 1 = 0$

$\Rightarrow (t-1)^2 = 0 \rightarrow t = \log_3 a = 1 \Rightarrow a = 3$ 3

$(\log 5 - \log 3)x^2 + (\log 3 + \log 3)x - (\log 5 + \log 3) = (\log 10 - \log 2 - \log 3)x^2 + (2\log 3)x - (\log 10 - \log 2 - \log 3) =$

$(1 - 0.3 - 0.4)x^2 + (0.8)x - (1 - 0.3 - 0.4) = \frac{3}{10}x^2 + \frac{8}{10}x - \frac{3}{10} \Rightarrow$ 4

اختلاف ریشه‌ها: $\frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{\frac{64}{100} + \frac{36}{100}}}{\frac{3}{10}} = \frac{10}{3}$ ☆

$\log_{14} 10 = \frac{\log_2 10}{\log_2 14} = \frac{\log_2 (5\times 2)}{\log_2 (7\times 2)} = \frac{\log_2 5 + \log_2 2}{\log_2 7 + \log_2 2} = \frac{2+1}{2.8+1} = \frac{3}{3.8} = \frac{15}{19}$

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☆ $\log_5 2 = \frac{1}{2} \rightarrow \frac{1}{\log_2 5} = \frac{1}{2} \rightarrow \log_2 5 = 2$

$\log_2 7 = 2.8$

$\log_{15}^{6} = \frac{\log_3^6}{\log_3^{15}} = \frac{\log_3^2+\log_3^3}{\log_3^5+\log_3^3} = \frac{\frac58+1}{\frac32+1} = \frac{\frac{13}{8}}{\frac52} = \boxed{\frac{13}{20}}$

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$\star \log_2^3 = \frac{16}{10} \Rightarrow \boxed{\log_3^2 = \frac58}$

$\boxed{\log_3^5 = \frac32}$

$\log_8^{9\times 2} = m \Rightarrow \underbrace{\log_8^2}_{\frac13} + \log_{2^3}^{3^2} = m \Rightarrow \frac13 + \frac23\log_2^3 = m \Rightarrow \log_2^3 = \frac32 m - \frac12$

$\to \log_4^{4\times 3} = \underbrace{\log_4^4}_{1} + \log_{\underset{2^2}{4}}^3 = 1 + \frac12\log_2^3 = 1+\frac12\left(\frac32 m - \frac12\right) = \frac34 + \frac34 m = \boxed{\frac34(1+m)}$ 7

$(0.4)^{2x-1} = \left(\frac{125}{8}\right)^{x^2} \Rightarrow \left(\frac25\right)^{2x-1} = \left(\frac52\right)^{3x^2} \to 2x-1 = -3x^2 \to 3x^2+2x-1=0 \begin{cases} x=-1 \\ x=\frac13 \end{cases}$

$\left(\frac25\right)^{-3x^2}$

$x=-1 \to \log_8^{-8}$ ✗ غ ق ق

$x=\frac13 \to \log_8^4$ ✓ ق ق $= \log_{2^3}^{2^2} = \boxed{\frac23}$ 8

$\log_{2^3}^b = \frac13\log_2^b = \frac23(1+a) \Rightarrow \frac12\log_2^b = 1+\log_2^3 \Rightarrow \log_2^{\sqrt b} = 1+\log_2^3 \Rightarrow$

$2^{1+\log_2^3} = \sqrt b \Rightarrow 2\times 2^{\log_2^3} = \sqrt b \Rightarrow 2\times 3 = \sqrt b \Rightarrow \boxed{b=36}$ 9

$\log(3(36)-8) = \log_{10}^{100} = \boxed{2}$

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① عکس جمع ریشه ها $\Rightarrow \frac{4a}{b} = \log 4$ ، واسطه حسابی $2a = b+c \to c = 2a-b$

② $\frac ca = \frac{2a-b}{a} = 2 - \frac ba$, ① $\to \frac ba = \frac{4}{4\log 4}$

$\hookrightarrow 2 - \frac{4}{\log 4}$ 10

⊛ $\left(\frac{1}{\sqrt2}\right)^{\frac ca} = 2^{-\frac18 \times \frac{4}{\log 4}} = \left(\frac12\right)^{\log_{16}^{10}}$