نام: فاطمه شیخی ۱۷,۲۵ شمارهٔ تکلیف: 23 کلاس: یازدهم دختر A

$n^a = m$

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

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

الف) $\frac{x}{\log_{\frac{1}{2}}^{x}} \geq 0 \Rightarrow$ ① $x>0$ شرط لگاریتم ② $\times \; | \; + \; | \; -$ (0, 1) $\to$ ①∩② $= D_y = (0,1)$

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

② $\sqrt{x^2-1} \to x^2-1\geq 0 \Rightarrow (-\infty,-1]\cup[1,+\infty)$

①∩② $=(-\infty,-1)\cup(2,+\infty)$

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

$\Rightarrow (t-1)^2=0 \to t=\log_3^a=1 \Rightarrow \boxed{a=3}$ 3

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

$(1-0.3-0.4)x^2+(0.8)x-(1-0.3-0.4) = \frac{3}{10}x^2+\frac{8}{10}x-\cancel{\frac{3}{10}}$ -1.1 $\Rightarrow$ 4

$\to \begin{cases} x_1 = 1 \\ x_2 = \frac{-1.1}{0.3} \end{cases} \to |x_1-x_2| = \frac{14}{3}$

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

$\log_{14}^{10} = \frac{\log_2^{10}}{\log_2^{14}} = \frac{\log_2^{5\times2}}{\log_2^{7\times2}} = \frac{\log_2^5+\log_2^2}{\log_2^7+\log_2^2} = \frac{2+1}{2.8+1} = \frac{3}{3.8} = \boxed{\frac{15}{19}}$ 5

★ $\log_5^2 = \frac{1}{2} \to \frac{1}{\log_2^5} = \frac{1}{2} \to \boxed{\log_2^5=2}$

$\boxed{\log_2^7=2.8}$

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

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6

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

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

$\log_8^{9\times2} = m \Rightarrow \underbrace{\log_8^2}_{\frac13}+\log_{2^3}^{3^2} = m \Rightarrow \frac13+\frac23\log_2^3 = m \Rightarrow \log_2^3 = \frac32 m-\frac12$

$\to \log_4^{4\times3} = \underbrace{\log_4^4}_{1}+\log_{\underset{2^2}{4}}^3 = 1+\frac12\log_2^3 = 1+\frac12\left(\frac32m-\frac12\right) = \frac34+\frac34m = \boxed{\frac34(1+m)}$ ۲ 7

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

$x=-1 \to \log_8^{-8}$ ✗ غ ق ق

۲ 8

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

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

$2^{1+\log_2^3} = \sqrt b \Rightarrow 2\times2^{\log_2^3} = \sqrt b \Rightarrow 2\times3 = \sqrt b \Rightarrow \boxed{b=36}$ ۲ 9

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

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① عکس جمع رسید 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 $\to \frac ba = \frac{4}{4\log4}$

$\hookrightarrow 2-\frac{4}{\log4}$ ۰/۲۵ 10

⊛ $\left(\frac{1}{\sqrt2}\right)^{\frac ca} = 2^{-\frac18\times\frac{4}{\log4}} = \left(\frac12\right)^{\log_{16}^{19}}$

$$a = \frac{b+c}{2} \rightarrow b = 2a - c \rightarrow \frac{1}{x_1 + x_2} = \frac{1}{S} = \frac{4a}{b} = \frac{4a}{2a-c} = 2\log 2$$

$$\rightarrow \frac{2a}{2a-c} = \log 2 \xrightarrow{\text{معکوس}} \frac{2a-c}{2a} = \log_2 10 \rightarrow 1 - \log_2 10 = \frac{c}{2a} \rightarrow 2 - \log_2 100 = \frac{c}{a} \quad (1)$$

$$\left(\frac{1}{\sqrt[8]{2}}\right)^{\frac{c}{a}} = \left(2^{-\frac{1}{8}}\right)^{\frac{c}{a}} = \left(2^{\frac{c}{a}}\right)^{-\frac{1}{8}} \xrightarrow{(1)} \left(2^{2-\log_2 100}\right)^{-\frac{1}{8}}$$

$$\left(\frac{2^2}{2^{\log_2 100}}\right)^{-\frac{1}{8}} = \left(\frac{4}{100}\right)^{-\frac{1}{8}} = (25)^{\frac{1}{8}} = \sqrt[4]{5}$$