$\log_{8}^{18} = m \qquad \log_{4}^{12} = \underbrace{\log_{4}^{4}}_{1} + \log_{4}^{3} \Rightarrow \frac{12-3+m}{12} = \frac{9+m}{12}$

$\log_{2}^{18} = \frac{m}{3} \qquad \log_{4}^{3} \Rightarrow \frac{1}{2}\log_{2}^{3}$

$\underbrace{\log_{2}^{2}}_{1} + \log_{2}^{9}$

$1 + 2\log_{2}^{3} = \frac{m-3}{3} \Rightarrow \log_{2}^{3} = \frac{m-3}{6} \Rightarrow \log_{4}^{3} = \frac{m-3}{12}$

$(0.4)^{2x-1} = \left(\frac{125}{8}\right)^{x^2} \qquad \log_{8}^{(9x+1)} \geq 0$ *

$\log_{8}^{4} = \frac{2}{3}\log_{2}^{2} \Rightarrow \frac{2}{3}$

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

$-3x^2 = 2x-1 \Rightarrow 3x^2+2x-1 \lessgtr \begin{matrix}-1 \\ +\frac{1}{3}\end{matrix}$ * [illegible]

$\Rightarrow 9\times\frac{1}{3}+1 = 4$

$\log_{2}^{3} = a \qquad \log_{8}^{b} = \frac{2}{3}(1+a) \qquad \log(3b-8) \qquad \log_{10}^{108-8} = 2$

$\frac{1}{3}\log_{2}^{b} = \frac{2}{3}(1+a)$

$\log_{2}^{b} = 2\underbrace{(1+a)}_{\log_{2}^{2}+\log_{2}^{3}}$

$\log_{2}^{b} = 2\log_{2}^{6} \Rightarrow \log_{2}^{b} = \log_{2}^{36} \Rightarrow b = 36$

$\frac{1}{\alpha+\beta} = \log 4 \qquad -4ax^2+bx+\frac{1}{2}c = 0 \qquad 2a = c+b$

$\frac{-b}{-4a} = \frac{b}{4a} \qquad \left(\frac{1}{\sqrt[8]{2}}\right)^{\frac{c}{a}} = ?$

$\frac{4a}{b} = \log 4 \qquad \frac{1}{2^{\frac{1}{8}}} \Rightarrow \left(\frac{1}{2}\right)^{\frac{1}{8}} \Rightarrow \left(2^{-\frac{1}{8}}\right)^{\frac{c}{a}}$

$\frac{2(c+b)}{b} = 2\log_{10}^{2}$

$\frac{c}{b}+1 = \log_{10}^{2} \Rightarrow \underbrace{\log_{10}^{10} - \log_{10}^{2}}_{\log_{10}^{5}} = -\frac{c}{b} \qquad -\frac{c}{2a-c} \Rightarrow \log_{5}^{10} = -\frac{2a-c}{c}$

$\log_{5}^{10} = \frac{-2a}{c}+1$

$\left(2^{-\frac{1}{8}}\right)^{\log_{\frac{1}{2}}^{5^2}} \Rightarrow 5^2\,\underbrace{\log_{\frac{1}{2}}^{2^{-\frac{1}{8}}}}$

$-\frac{1}{8}\log_{2^{-1}}^{2} \Rightarrow \frac{-\frac{1}{8}}{-1}\log_{2}^{2} = \frac{1}{8}$

$\frac{2a}{c} = \log_{5}^{5} - \log_{5}^{10}$

$\frac{2a}{c} = \log_{5}^{\frac{1}{2}}$

$\frac{a}{c} = \frac{1}{2}\log_{5}^{\frac{1}{2}}$

$\frac{a}{c} = \log_{5^2}^{\frac{1}{2}}$

$\frac{c}{a} = \log_{\frac{1}{2}}^{5^2}$

$\frac{5^2}{8}$

نوران امامی

$\log_n m = a$ $\quad \log_{mn} m^2 n = b \quad a>0 \quad [b]$

$\log_{mn} m^2 + \log_{mn} n = \frac{1}{a+1}$

$2\log_{mn} m \quad\quad \frac{1}{\log_n mn} \Rightarrow \log_n m + \log_n n$ (a, 1)

$\frac{2}{\log_m mn} \Rightarrow \frac{2}{\frac{a+1}{a}} = \frac{2a}{a+1} + \frac{1}{a+1} = \frac{2a+1}{a+1} \Rightarrow \left[1+\frac{a}{a+1}\right] \Rightarrow 1 = [b]$

$\log_m mn = \log_m m + \log_m n = 1 + \frac{1}{a}$

$y = \sqrt{\frac{x}{\log_{\frac12} x}} \geq 0 \quad x>0 \quad \log_{\frac12} x \neq 0 \Rightarrow (\frac12)^0 \neq x = x \neq 1 \quad$ (0, 1) $\Rightarrow x \in (0,1)$

$y = \frac{\log_4 (x^2-x-2)}{\sqrt{x^2-1}+1} \quad x^2-x-2>0 \quad (x+1)(x-2) \quad (-1) \quad (2) \quad \Rightarrow (-\infty, -1) \cup (2, +\infty)$

$\sqrt{x^2-1}+1 \neq 0 \quad \sqrt{x^2-1} \neq -1$ ✗

$2\log_x a + \log_a \sqrt{x} = 2 \quad x=9, \ a=? \quad \frac{2}{b} + \frac{b}{2} = 2 \Rightarrow \frac{4+b^2}{2b} = 2 \Rightarrow b^2+4 = 4b$

$b^2 - 4b + 4 = 0$

$2\frac{1}{\log_a x} + \frac12 \underbrace{\log_a x}_{b} \Rightarrow \log_a 9 = 2 \Rightarrow a^2 = 3^2 \Rightarrow a = 3 \quad (b-2)^2 = 0 \quad b = 2$

$\log 2 \simeq 0.3 \quad \log 3 \simeq 0.4$ اختصاصی‌ها؟ $\frac{25}{181}$

$(\log\frac{5}{3})x^2 + (\log 9)x - \log 15 = 0 \quad \frac{\sqrt{0.96+4(0.33)}}{0.3} = \frac{1.4}{0.3}$ (1.96)

$\log 5 = \log 10 - \log 2$; $1 - 0.3 = 0.7$

$(\log 9)^2 - 4(\log\frac{5}{3} \times -\log 15)$; $2\log 3 \to (0.8)^2 \to 0.64$

$+4(\log\frac{5}{3} \times \log 15)$

$(\log 5 - \log 3)(\log 3 + \log 5)$

$0.7 - 0.4 \quad\quad 0.4 + 0.7$

$0.3 \times 1.1 \Rightarrow 0.33$

$\frac{\frac{14}{10}}{\frac{3}{10}} = \frac{14}{3}$

$\log_2 7 = 2.8 \quad \log_5 2 = 0.5 \quad \log_{14} 10$

$\log_2 7 + \log_2 2 = \log_2 14 \Rightarrow \frac{1}{\log_{14} 2} \Rightarrow \log_{14} 2 + \log_{14} 5 = \log_{14} 10$

$2.8 + 1 = 3.8 \quad\quad \frac{1}{3.8} \quad \frac{1}{3.8} \quad \frac{1}{1.9} \Rightarrow \frac{10}{38} + \frac{10}{19} = \frac{10+20}{38} = \boxed{\frac{15}{19}}$

$\log_2 7 \times \log_5 2 = \log_5 7$

$2.8 \times \frac12 = 1.4 \to \log_5 7 + \log_5 2 = \log_5 14$

$1.4 \quad 0.5 \quad 1.9$

$\log_3 5 = 1.5 \quad \log_2 3 = 1.6 \quad \log_{15} 6$

$\log_3 5 \times \log_2 3 = \log_2 5 + \log_2 3 = \log_2 15 \Rightarrow \log_{15} 2 + \log_{15} 3 = \log_{15} 6$

$1.5 \times 1.6 \quad\quad 2.4 + 1.6 = 4 \quad\quad \frac14 \quad \frac{2}{5} \Rightarrow \frac{15+8}{60} = \frac{23}{60}$

$\log_3 5 + \log_3 3 = \log_3 15 \Rightarrow \log_{15} 3 = \frac{10}{25} = \frac{2}{5}$

$1.5 \quad 1 \quad 2.5$