نام و نام خانوادگی ...النا داریایی... پاسخنامه تشریحی تکلیف شماره ...۲۴... کلاس ...دهم ریاضی دختر B...

۱	$\log_b n = a \qquad \log_b mn^2 = b \qquad [b] ?$ $n^a = m$ $\log_{mn} m^2 n \xrightarrow{n^a = m} \log_{n^{(a+1)}} n^{(2a+1)} = b = \frac{2a+1}{a+1}$ $\Rightarrow [b] = \left[\frac{a+1+a}{a+1}\right] = \left[1 + \frac{a}{a+1}\right] \xrightarrow{a>0} [b] = \left[1 + \underbrace{\frac{a}{a+1}}_{0< \;\; <1}\right] \Rightarrow \boxed{[b] = 1}$	
۲	الف) $y = \sqrt{\frac{x}{\log_{\frac{1}{2}} x}} \rightarrow x>0$ $\log_{\frac{1}{2}} x \neq 0 \rightarrow x \neq 1$ $D_f = (0, 1)$	ب) $y = \log_2 \frac{x^2-x-2}{\sqrt{x^2-1}} + 1 \qquad D?$ $x^2-x-2>0$ $(x-2)(x+1)>0$ $\sqrt{x^2-1}>0$ $(x-1)(x+1)>0$ $D_f = (-\infty, -1) \cup (2, +\infty)$
۳	$2\log_x a + \log_a \sqrt{x} = 2 \xrightarrow{x=9} 2\log_9 a + \log_a 3 = 2 \longrightarrow \underbrace{\log_3 a}_{t} + \log_a 3 = 2$ $t + \frac{1}{t} = 2 \rightarrow t^2 - 2t + 1 = 0 \rightarrow (t-1)^2 = 0 \rightarrow t = 1 \longrightarrow \log_3 a = 1$ $\boxed{a = 3}$	
۴	$\log 2 = 0.3 \quad \log 3 = 0.48 \rightarrow 2\log 3 = \log 9 = 0.96 \qquad \log 5 = \log \frac{10}{2} = 1 - 0.3 = 0.7$ $\left(\log \frac{5}{3}\right)x^2 + \underbrace{(\log 9)}_{0.96}x - \log 15 = 0 \Rightarrow 0.22x^2 + 0.96x - 1.18 = 0$ $\underbrace{\log 5}_{0.7} - \underbrace{\log 3}_{0.48} \qquad \log 5 + \log 3 = 1.18 \Rightarrow 3x^2 + 8x - 11 = 0 \quad 1, -\frac{11}{3}$ $1 - \left(-\frac{11}{3}\right) = \boxed{\frac{14}{3}}$	
۵	$\log_2 7 = 2.8 \qquad \log_5 2 = 0.5 \qquad \log_2 5 = 2 \qquad \log_{14} 10 = \frac{\log_2 10}{\log_2 14} = \frac{\log_2 2 + \log_2 5}{\log_2 2 + \log_2 7}$ $\frac{1+2}{1+2.8} = \frac{3}{3.8} = \frac{30}{38} = \boxed{\frac{15}{19}}$	

$\log_3 5 = 1.5$ $\qquad$ $\underbrace{\log_2 3 = 1.6}_{\log_3 2 = \frac{1}{1.6}}$ $\qquad$ $\log_{15} 6 = \dfrac{\log_3 6}{\log_3 15} = \dfrac{\log_3 3 + \log_3 2}{\log_3 5 + \log_3 3}$ 6

$\dfrac{1 + \frac{1}{1.6}}{1.5 + 1} = \dfrac{\frac{2.6}{1.6}}{2.5} = \dfrac{2.6}{1.6 \times 2.5} = \dfrac{2.6}{4} = \dfrac{26}{40} = \boxed{\dfrac{13}{20}}$

$\log_8 18 = m$ $\qquad$ $\log_4 12 = ?$

$\log_{2^3} 18 = m \to \log_2 18 = 3m \to \log_2 2 \times 3^2 = 3m = 2\log_2 3 + 1 = 3m \to \log_2 3 = \dfrac{3m-1}{2}$ 7

$\log_4 12 = \log_4 4 \times 3 = 1 + \log_4 3 = 1 + \frac{1}{2}\underbrace{\log_2 3}_{\frac{3m-1}{2}} = 1 + \dfrac{3m-1}{4} = \boxed{\dfrac{3m+3}{4}}$

$(0.4)^{2m-1} = \left(\dfrac{125}{8}\right)^{n^2}$ $\qquad$ $\log_8 (9n+1)$

$(2n-1)\log \frac{2}{5} = n^2 \log \left(\frac{2}{5}\right)^{-3} \longrightarrow (2m-1)\cancel{\log \frac{2}{5}} = -3n^2 \cancel{\log \frac{2}{5}} \longrightarrow 2n-1 = -3n^2 \longrightarrow 3n^2 + 2n - 1 = 0$ 8

$\Longrightarrow \log_8 (9m+1) \xrightarrow{n = \frac{1}{3}} \log_8 4 = \dfrac{2}{3}$ $\qquad$ غ ق ق $-1 = n$ $\qquad$ $\boxed{\frac{1}{3} = n}$ ق ق

$\log_2 3 = a$ $\qquad$ $\log_8 b = \frac{2}{3}(1+a)$ $\qquad$ $\log(3b - 8) \xrightarrow{b = 36} \log 100 = \boxed{2}$

$\log_8 b = \frac{2}{3}(1+a) \to \frac{3}{2}\log_8 b = 1 + a \to \log_{64} b^3 = 1 + a \to \log_{64} b^3 - 1 = a$ 9

$\log_{64} \dfrac{b^3}{64} = a \Longrightarrow \log_{2^6} \left(\dfrac{b}{4}\right)^3 = \log_2 3 \Longrightarrow \frac{1}{2}\log_2 \dfrac{b}{4} = \log_2 3$

$\log_2 \sqrt{\dfrac{b}{4}} = \log_2 3 \longrightarrow \sqrt{\dfrac{b}{4}} = 3 \longrightarrow \dfrac{b}{4} = 9 \longrightarrow \boxed{b = 36}$

$-4ax^2 + bx + \frac{1}{2}c = 0$ $\qquad$ $\left(\dfrac{1}{\sqrt[8]{2}}\right)^{\frac{c}{a}}$ $\qquad$ $c + b = 2a \to b = 2a - c$

$S = \dfrac{b}{4a} \xrightarrow{\text{عکس}} \dfrac{4a}{b} = \log 4 \longrightarrow \dfrac{2a}{b} = \log 2 \longrightarrow \dfrac{2a}{2a-c} = \log 2 \longrightarrow \dfrac{2a-c}{2a} = \log_2 10$ 10

$1 - \dfrac{c}{2a} = \log_2 10 \longrightarrow \log_2 \dfrac{1}{5} = \dfrac{c}{2a} \longrightarrow \dfrac{c}{a} = 2\log_2 \dfrac{1}{5}$

$\left(\dfrac{1}{\sqrt[8]{2}}\right)^{\frac{c}{a}} = \dfrac{1}{8} \times \dfrac{c}{a} = -\dfrac{2}{8}\log_2 5 = \dfrac{1}{4}\log_2 5 = \boxed{5^{-\frac{1}{4}}}$