نام و نام خانوادگی: فرهام فیروزنده .... پاسخنامه تشریحی تکلیف شماره ...۲۳... کلاس ...یازدهم ب ...B.....

$\log_n m = a$ $\log_{mn} m^2 n = b \to b = \dfrac{\log_n m^2 n}{\log_n mn} \Rightarrow \dfrac{\log_n m^2 + \log_n n}{\log_n m + \log_n n} = \dfrac{2\log_n m + 1}{\log_n m + 1}$ $\Rightarrow \dfrac{2a+1}{a+1} \Rightarrow b = \dfrac{2(a+1)-1}{a+1} = 2 - \dfrac{1}{a+1} \Rightarrow 2 - x = 1 < b < 2$ $\Rightarrow [b] = \boxed{1}$	۱
پایین صفحه الف) $y = \sqrt{\dfrac{x}{\log_{\frac{1}{2}} x}} \to \geq 0 ,\ \log_{\frac{1}{2}} x > 0$ $\Rightarrow x \geq 0$ $\log_{\frac{1}{2}} x \to x > 0$ $\to \log_{\frac{1}{2}} x = 0 \to x = \frac{1}{2} \to x \neq 1 \to x < \frac{1}{2}$ ب) $y = \dfrac{\log_2 (x^2 - x - 2)}{\sqrt{x^2-1} + 1} \Rightarrow (x-2)(x+1) > 0 \to$ (-1, 2: $+ \mid - \mid +$) $\to x > 2,\ x < -1$ $x^2 - 1 \geq 0 \to x^2 \geq 1 \to x \geq 1 ,\ x \leq -1 \Rightarrow D = (-\infty, -1) \cup (2, +\infty)$	۲
$2\log_9 a + \log_a \sqrt{9} = 2 \to 2\log_9 a + \log_a 3 = 2 \to \underbrace{\log_3 a}_{t} + \log_a 3 = 2$ $\to t + \dfrac{1}{t} = 2 \to \dfrac{t^2+1}{t} = 2 \Rightarrow t^2 - 2t + 1 = 0 \to t = 1$ $\Rightarrow \log_3 a = 1 \to a = 3^1 \Rightarrow \boxed{a = 3}$	۳
$\log 2 = 0/3 ,\ \log 3 = 0/4 \to \log 5 = \log 10 - \log 2 = 1 - 0/3 = 0/7$ $[\log \frac{5}{3}] x^2 + (\log 9) x - \log 15 = 0$ ۱٫۱ $\log 5 - \log 3 = 0/7 - 0/4 = 0/3$ $\to -\log 15 = -(\log 3 + \log 5) = -1/1$ $3x^2 + 8x - 11 = 0 \xrightarrow{a+b+c=0} x_1 = 1 ,\ \underbrace{x_2 = \frac{c}{a}}_{-\frac{11}{3}} \Rightarrow 1 - (-\frac{11}{3}) = \boxed{\frac{14}{3}}$	۴
$\log_2 7 = 2/8 ,\ \log_5 2 = 0/5 \to \dfrac{1}{\log_5 2} = \dfrac{1}{0/5} = 2 = \log_2 5$ $\log_{14} 10 = ? \to \dfrac{\log_2 10}{\log_2 14} = \dfrac{\log_2 (2 \times 5)}{\log_2 (2 \times 7)} = \dfrac{\log_2 2 + \log_2 5}{\log_2 2 + \log_2 7} = \dfrac{1+2}{1+2/8}$ $\Rightarrow \dfrac{15}{19}$	۵

$\dfrac{x}{\log_{\frac{1}{2}} x} \geq 0 \to \log_2 x < 0 \to x < 2^0 = 1 \to \begin{cases} x > 0 \\ x < 1 \end{cases} \to \boxed{0 < x < 1}$ ۲ الف)

$\log_3 5 = 1.5$, $\log_2 3 = 1.6 \longrightarrow \frac{1}{\log_2 3} = \frac{1}{1.6} = \frac{10}{16} = 0.625 = \log_3 2$

$\log_{15} 6 = ? \longrightarrow \frac{\log_3 6}{\log_3 15} = \frac{\log_3 2 + 1}{\log_3 5 + 1} = \frac{0.625+1}{1.5+1} = \frac{1.625}{2.5} = \boxed{0.65}$ ۶

$\log_8 18 = m \longrightarrow \log_{2^3} 18 \Rightarrow m = \frac{1}{3}\log_2 18 \Rightarrow \log_2 18 = 3m$

$\log_2 2 + \log_2 3^2 = 3m \Rightarrow 1 + 2\log_2 3 = 3m \rightarrow \log_2 3 = \frac{3m-1}{2}$

$\log_4 12 \rightarrow \frac{\log_2 12}{\log_2 4} = \frac{\log_2 12}{2} = \frac{\log_2 4 + \log_2 3}{2} \Rightarrow \frac{2+\log_2 3}{2} = \frac{2+\left(\frac{3m-1}{2}\right)}{2}$ ۷

$= \frac{\frac{4+3m-1}{2}}{2} = \boxed{\frac{3m+3}{4}}$

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

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

$\Rightarrow \left(\frac{5}{2}\right)^{-2x+1} = \left(\frac{5}{2}\right)^{3x^2} \Rightarrow 3x^2 = -2x+1 \Rightarrow 3x^2+2x-1$ ۸

$\Rightarrow x_1 = -1$, $x_2 = \frac{1}{3} \rightarrow$ ق ق

$\Rightarrow \log_8 4 \rightarrow \log_{2^3} 2^2 = \frac{2}{3}\log_2 2 = \boxed{\frac{2}{3}}$

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

$\log(3b-8)$ $\hookrightarrow \frac{1}{3}\log_2 b = \frac{2}{3}(1+a) \rightarrow \log_2 b = 2(1+a)$

$\hookrightarrow \log(108-8)$ $\Longrightarrow 2(1+\log_2 3) \rightarrow 2\log_2 6$ ۹

$= \log 100 = \boxed{2}$ $\Longrightarrow \log_2 b = \log_2 6^2 = \log_2 36 \Rightarrow \boxed{b = 36}$

$-4ax^2 + bx + \frac{1}{2}c = 0 \rightarrow b+c = 2a \rightarrow 2a = b+c \Rightarrow 2 = \frac{b+c}{a}$

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

$\Rightarrow S = -\frac{b}{-4a} = \frac{b}{4a} \rightarrow \log 4 = \frac{1}{\frac{b}{4a}} \Rightarrow \log 4 = \frac{4a}{b} \Rightarrow 2\log 2 = \frac{4a}{b}$ ۱۰

$\Rightarrow \frac{1}{2} \times \frac{1}{\log_2 10} = \frac{a}{b} \Rightarrow \frac{b}{a} = 2\log_2 10$, $\frac{c}{a} = 2 - 2\log_2 10$

$\Longrightarrow 2 - 2(\log_2 5 + 2\log_2 2) \Rightarrow \frac{c}{a} = -2\log_2 5$