نام و نام خانوادگی .....علی جمالی..... پاسخنامه تشریحی تکلیف شماره .....۲۳..... کلاس .....دوازدهم A.....

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$m = n^9$

$b = \log_{n^{a+1}} n^{2a+1} = \frac{2a+1}{a+1} > 1 \Leftrightarrow a > 0$

$\frac{2a+1}{a+1} < 2$

$[b] = 1$

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الف) $x > 0$

$\frac{x}{\log_{\frac{1}{2}} x} \geq 0 \Rightarrow \log_{\frac{1}{2}} x > 0 \Rightarrow x < 1$

$D_f = (0, 1)$

ب) $x^2 - x - 2 > 0$

$\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{1 \pm \sqrt{1+8}}{2} = \frac{1 \pm 3}{2} = 2, -1$

| $x$ | $-1$ | $2$ | |
|---|---|---|---|
| | $+$ | $0$ | $-$ | $0$ | $+$ |

(I) $x < -1$ یا $x > 2$

$1 - x^2 \geq 0 \rightarrow -1 \leq x \leq 1$ (II)

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

$D_f = I \cap II = (-\infty, -1) \cup (2, +\infty)$

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$2 \log_{a^2} a^3 + \log_a^3 = \log_{a^2} a^3 + \log_a^3 = 2$

$\log_{a^2} a^3 = t \Rightarrow \log_a^3 = \frac{1}{t}$

$t + \frac{1}{t} = 2 \Rightarrow t = 1 \Rightarrow \log_{a^2} a^3 = 1 \Rightarrow a = 3$

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$\log \frac{4}{5} = \log 4 - \log 5 = \log 10 - \log 2 - \log 5 = 1 - 0.3 - 0.4 = 0.3$

$\log 9 = 2 \log 3 = 0.8$

$\log 15 = \log 3 + \log 5 = \log 3 + \log 10 - \log 2 = 0.4 + 1 - 0.3 = 1.1$

$0.3x^2 + 0.8x - 1.1 = 0$

$\frac{\sqrt{\Delta}}{|2a|} = \frac{\sqrt{0.64 + 1.32}}{|0.6|} = \frac{\sqrt{1.96}}{0.3} = \frac{1.4}{0.3} = \frac{14}{3}$

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$\log_{15}^{10} = \frac{\log 10}{\log 15} = \frac{\log 2 + \log 5}{\log 3 + \log 5} = \frac{\log 2 + 2 \log 2}{\log 3 + 2.18 \log 2} = \frac{\log 2^3}{\log 2^{3.18}} = \frac{15}{19}$

$\frac{\log 7}{\log 2} = 2.8 \Rightarrow \log 7 = 2.8 \log 2$

$\frac{\log 2}{\log 5} = 0.5 \Rightarrow \log 5 = \frac{\log 2}{0.5} = 2 \log 2$

$$\log_{10}^{4} = \frac{\log 4}{\log 10} = \frac{\log 3 + \log 2}{\log 3 + \log 5} = \frac{\log 3 + \frac{\log 3}{1.4}}{\log 3 + 1.5 \log 3} = \frac{1 + \frac{1}{1.4}}{1 + 1.5} = \frac{2.4}{1.4} = \frac{24}{10} = \boxed{0,42}$$

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$$\frac{\log 5}{\log 3} = 1.5$$

$$\frac{\log 3}{\log 2} = 1.4$$

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$$8^m = 18 \Rightarrow 2^{3m} = 2 \cdot 3^2 \Rightarrow 2^{\frac{3m-1}{2}} = 3$$

$$\log_{2^2}^{3 \cdot 2^2} = \log_{2^2}^{2^{2 + \frac{3m-1}{2}}} = \frac{2 + \frac{3m-1}{2}}{2} = \frac{\frac{4 + 3m - 1}{2}}{2} = \frac{3m+3}{4} = \boxed{\frac{3}{4}(m+1)}$$

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$$(0.4)^{2x-1} = \left(\frac{1000}{64}\right)^{x^2} = \left((0.4)^{-3}\right)^{x^2}$$

$$\Rightarrow 2x - 1 = -3x^2 \Rightarrow x = -1 \,,\, x = \frac{1}{3}$$

$$3x^2 + 2x - 1 = 0$$
$$(3x-1)(x+1)$$

$x = -1 \Rightarrow 9x + 1 < 0$

$$\log_{8}^{\frac{9}{16} + 1} = \log_{8}^{4} = \log_{2^3}^{2^2} = \boxed{\frac{2}{3}}$$

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$$b = 8^{\frac{2}{3}(1+a)} = 2^{2(1+a)} \Rightarrow b = 2^4 \times (3^2)^2 = 4 \cdot 9 = \boxed{36}$$
$$2^a = 3$$

$$3b - 8 = 3 \cdot 36 - 8 = \boxed{100} \Rightarrow \log 3b - 8 = \log_{10} 100 = \boxed{2}$$

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$$-\frac{a_1}{a} = -\frac{(-4a)}{b} = \frac{4a}{b} = \log 4 \Rightarrow a = \frac{b \log 4}{4} = b \frac{\log 2}{2}$$

$$b + c = 2a \Rightarrow c = b \log 2 - b = b(\log 2 - 1)$$

$$\left(\frac{1}{\sqrt[4]{2}}\right)^{\frac{c}{a}} = \left(2^{\frac{-1}{8}}\right)^{\frac{2(\log 2 - 1)}{\log 2}} = 2^{\frac{1 - \log 2}{4 \log 2}} = 2^{\frac{\log 5}{\log 16}} = 2^{\log_{16}^{5}} = 5^{\log_{16}^{2}} = 5^{\frac{-1}{4}} = \boxed{\frac{1}{\sqrt[4]{5}}}$$

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