فاطمه دارخوان — ریاضی (۱) — شماره ۲۳ — یازدهم دفتر B

(۱)

$\log_n m = a$ و $\log_{mn} m^2 n = b \to \dfrac{\log_n m^2 n}{\log_n mn} = b = \dfrac{\log_n m^2 + 1}{\log_n m + 1} \to \dfrac{2a+1}{a+1}$

$\dfrac{2(a+1)-1}{a+1} = 2 - \dfrac{1}{a+1} \to 1 < 2 - \dfrac{1}{a+1} < 2 \to [b] = 1$

(۲)

الف) $\sqrt{\dfrac{x}{\log_{\frac{1}{2}} x}} \to x > 0 \to \log_{\frac{1}{2}} x \neq \to x \neq 1$ ، $\to x = 4 \to \log_{\frac{1}{2}} 4 = -2$

$0 < x < 1$

ب) $\dfrac{\log(x^2 - x - 2)}{\sqrt{x^2-1} + 1} \to (x-2)(x+1) > 0$ ، $\to x^2 - 1 \geq 0 \to x^2 \geq 1 \to x \geq 1 \to x \leq -1$ ، $(-\infty, -1) \cup (2, +\infty)$

(۳)

$2\log_x a + \log_a \sqrt{a} = 2 \xrightarrow{x=9} 2\log_{3^2} a + \log_a 3 = 2$

$\log_3 a + \log_a 3 = 2$

$m + \dfrac{1}{m} = \dfrac{m^2+1}{m} = 2 \to m^2 - 2m + 1 = 0 \to (m-1)^2 \Rightarrow m - 1 = \log_3 a$

$\to a = 3$

(۴)

$\log \frac{5}{3} = \log 5 - \log 3 = \log 10 - \log 2 - \log 3 = 0/3$

$\log 9 = 2\log 3 = 0/8$

$\log 15 = \log 5 + \log 3 = \log 10 - \log 2 + \log 3 = 1/1$

$0/3x^2 - 0/8x - 1/1 = 0 \xrightarrow{\times 10} 3x^2 - 8x - 11 = 0 \xrightarrow{\text{ریشه}} m^2 - 8x - 33 = 0$

(۵)

$\log_2 5 = 2/8$

$\log_5 2 = 0/5 \to \log_2 5 = 2$

$\log_{12} 10 = \dfrac{\log_2 10}{\log_2 12} = \dfrac{\log_2 5 + \log_2 2}{\log_2 3 + \log_2 4} = \dfrac{3}{3/8}$

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