

- 4

-2



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✓

-9

2

271

- 1

$\log_n^m a, \log_{mn}^m b, a > 0, [b] \leq ?$

$\hookrightarrow \frac{\log m}{\log n} = a \quad \hookrightarrow 1 + \frac{\log m}{\log m + \log n} = b \rightarrow 1 + \frac{a}{a+1} = b \rightarrow [b] \leq 1$

الف) $y = \sqrt{\frac{x}{\log x}} \rightarrow x > 0, \frac{x}{x+1} \geq 0 \quad -\frac{1}{x} + \frac{1}{x+1} \rightarrow y = (-\infty)$

ب) $y = \frac{\log(x^2 - x - 2)}{\sqrt{x^2 - 1} + 1} \rightarrow x^2 - x - 2 > 0 \rightarrow (x-2)(x+1) > 0 \rightarrow \frac{x-2}{x+1}$

$y = (-\infty, -1) \cup [2, +\infty)$

$x^2 - 1 > 0 \rightarrow x^2 \geq 1 \rightarrow x \geq 1, x \leq -1$

$\sqrt{x^2 - 1} + 1 \neq 0 \rightarrow \sqrt{x^2 - 1} \neq -1 \checkmark$

$r \log_a x + \log_a \sqrt{x} = 2, \quad x = 9, \quad a = ?$

$\frac{1}{r} \log_a x = \frac{1}{r \log_a x} \xrightarrow{x=9} r \log_a 9 + \frac{1}{r \log_a 9} = 2$

$\rightarrow r \log_a 9 = 1 \rightarrow a^r = 9 \rightarrow \underline{a = 3}$

$\log 2 \approx 0.13, \log 3 \approx 0.14 \rightarrow \log a \approx 0.14$

$2x^2 + 11x - 11 = 0 \rightarrow (4x+11)(x-1) = 0 \rightarrow x = \frac{11}{4}$

حاصل: $\frac{-11}{4} - 1 = \frac{-15}{4} \rightarrow \frac{15}{4} \checkmark$

$\log_4^V = 4.1, \log_4^2 = 0.14, \log_{16}^1 = ?$

$\hookrightarrow \log V = 4.1 \log 2 \quad \hookrightarrow r \log 2 = \log a$

$\log_{16}^1 = \frac{\log 2 + \log a}{\log 2 + \log V} = \frac{r+1}{1+4.1} = \frac{1}{4.1}$