

$$10\% \frac{V}{r} = r, 1$$

long 10
15

$$\log_{10} 10 = 1.0$$

$$\log^4_{2,10}$$

$\log^{\wedge} \alpha^{\wedge}$

$\log_{2F}^{1P}$

(off)

$$\log_{2n} 2x$$

$\log_r$

$$S = \kappa_1 + \dots$$

$$\log_n^m = a \quad \log_{mn}^{m^2n} = b$$

$$[b] \quad \log_{mn}^{m^2n} = \frac{\log_{mn}^{m^2n}}{\log_n^{mn}} = \frac{\log n^n + 2 \log n^m}{\log n^n + \log n^m} = \frac{1 + 2a}{1 + a}$$

$$\rightarrow [b] = \left[\frac{1+2a}{1+a} \right] = \left[1 + \frac{a}{1+a} \right] = 1 + \left[\frac{a}{1+a} \right] = 1 \quad \leftarrow \text{جواب}$$

$$\text{الف) } y = \sqrt{\frac{x}{\log \frac{x}{x^2}}}$$

$$\log \frac{x}{x^2} \neq 0 \rightarrow x \neq 1 \quad (1)$$

$$\frac{x}{\log \frac{x}{x^2}} \geq 0 \rightarrow \log \frac{x}{x^2} > 0 \rightarrow x < 1 \quad \Rightarrow D = (0, 1)$$

$$x > 0 \quad = x \cap (0, 1) \cap (1, \infty)$$

$$\text{ب) } y = \frac{\log \frac{x^2 - x - 2}{x}}{\sqrt{x^2 - 1} + 1} \Rightarrow D = (-\infty, -1) \cup (2, \infty)$$

$$x^2 - x - 2 > 0$$

$$(x-2)(x+1) > 0 \quad \begin{array}{c|c|c} - & + & + \\ \hline + & - & + \end{array}$$

$$D = (-\infty, -1) \cup (2, \infty)$$

$$\text{نیز } x^2 - 1 \geq 0 \rightarrow x \geq 1 \rightarrow (-\infty, -1) \cup [1, \infty)$$

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

$$2 \log_a^a + \frac{1}{\log_a^{\sqrt{x}}} = 2 \rightarrow 2 \log_a^a + \frac{1}{\frac{1}{\log_a^a}} = 2 \rightarrow 2t + \frac{1}{t} = 2 \Rightarrow t^2 - t + 1 = 0$$

$$\rightarrow (t+1)^2 = 0 \rightarrow t+1=0 \rightarrow t=-1 \rightarrow \log_a^a = \frac{1}{t} \rightarrow \log_a^a = -1 \rightarrow a = 9^{\frac{1}{-1}} \rightarrow a = \sqrt{9} \rightarrow a = 3$$

$$\log^r = 0, r \quad \log^r = 0, r \rightarrow \log^r = \log^r - \log^0 = 0, r \rightarrow 0, r = \log^0$$

$$\left(\log^{\frac{5}{3}} \right) x^r + (\log^9) x - \log^{10} = 0$$

$$(\log^0 - \log^r) x^r + (r \log^r) x - (\log^r + \log^0) = (0, r - 0, r) x + (r \times 0, r) x - (0, r + 0, r)$$

$$= (0, r) x^r + (0, r) x - 1, 1 = 0 \rightarrow 3x^r + 11x - 11 = 0$$

$$\Delta = 9r^2 + 11 \times 3 \times 11 = 19r^2 \rightarrow \frac{-11 \pm 11r}{3} = \left\{ 1, -\frac{11}{r} \right\} \leftarrow x^r \quad 1 + \frac{11}{r} = \frac{1r}{r} \quad \leftarrow \text{جواب}$$