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$y = x^2$ $x=1 \Rightarrow y=1$, $x=3 \Rightarrow y=9$ $\rightarrow 1 = 3^{A+B}$, $9 = 3^{3A+B}$ $\rightarrow \begin{cases} A+B=0 \\ -3A+B=2 \end{cases}$ ①

$-2A=-2 \rightarrow A=1, B=-1 \rightarrow x=0 \rightarrow f(0) = 3^{B} = \frac{1}{3}$ ⑤

$\log_2(2^n+16) = n+3 \rightarrow 2^{n+3} = 4^n + 16 \rightarrow 4^n - 8(2^n) + 16 = 0 \rightarrow t = 2^n \rightarrow$ ②

$t^2 - 8t + 16 = 0 \rightarrow (t-4)(t-4) = 0 \rightarrow 2^n = 4 \rightarrow n = \log_2^4$ ⑤

$2^n = 8 \rightarrow n = \log_2^8 \rightarrow \log_2^4 + \log_2^8 = \log_2^{32}$

$\underbrace{(\log_{21}^{3})^2}_{t} + (\log_{21}^{7} + \underbrace{\log_{21}^{3}}_{\log_{441}^{21} - \log_{21}^{7}})(\log_{21}^{49} + \log_{21}^{3}) = t^2 + (2-t)(2+t) = t^2 + 4 - t^2 = 4$ ③

⑤

$\log_{(1-x)^2}^{} + 3\log_{(1-x)^3}^{} = 2 \rightarrow 2\log^{1-x} = 2 \rightarrow 1-x = 10 \rightarrow x = -9$ ④

$\rightarrow \log_3^{1-x} = \log_3^9 = 2$ ⑤

$\log_2^{(x^2+2x+4)(x-2)} = \log_2^8 \rightarrow x^3 - 8 = 8 \rightarrow x^3 = 16 \rightarrow$ ⑨

$x = \sqrt[3]{16} \rightarrow \log_{\sqrt{2}}^{\sqrt[3]{2^4}} = \log_{2^{\frac{1}{2}}}^{2^{\frac{4}{3}}} = 4$ ⑤

$\log(2-x)(2-x)^2 = 3 \rightarrow (2-x)^3 = 10^3 \rightarrow 2-x = 10 \rightarrow x = -8$ ④

$\rightarrow \log_{\sqrt{2}}^{8} = \log_{2^{\frac{1}{2}}}^{2^3} = 6$ ⑤

$3^{x^2-2} = 3^{4x} \rightarrow x^2 - 4x - 2 = 0 \rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a} \rightarrow$ ⑦

$x = \frac{4 \pm \sqrt{24}}{2} = 2 \pm \sqrt{6} \rightarrow$ غیق $2-\sqrt{6}$ $\rightarrow 2+\sqrt{6}$ ✓ $\rightarrow \log_{\frac{1}{8}}^{x-2} = \log_4^{\sqrt{4}} = \frac{1}{2}$ ⑤

s.a.m

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$$\log_{18}^{1} = \frac{\log_3^8}{\log_3^{18}} = \frac{\log_3^2 + \log_3^4}{\log_3^9 + \log_3^2} = \frac{\frac{5}{8} + \frac{10}{8}}{2 + \frac{5}{8}} = \frac{5\frac{15}{8}}{\frac{21}{8}} = \frac{3}{7} \quad (1)$$

(9)

$$\log_{12}^{4} = \frac{\log_4^4}{\log_4^{12}} = \frac{\log_4^3 + \log_4^2}{\log_4^{16} + \log_4^3} = \frac{0,8 + 0,5}{1 + 0,8} = \frac{13}{18}$$

$$n=-1 \rightarrow a\log^2 - a + b\log^2 = 0 \rightarrow b\log^2 = a(1 - \log^2) \rightarrow \quad (10)$$

$$\frac{b}{a} = \frac{1-\log^2}{\log^2} = \frac{\log_{10}^{10} - \log_{10}^{2}}{\log_{10}^{2}} = \frac{\log_{10}^{5}}{\log_{10}^{2}} = \log_2^5 \rightarrow$$

$$(\sqrt{2})^{\frac{b}{a}} = (\sqrt{2})^{\log_2^5} = 5^{\log_2^{\sqrt{2}}} = 5^{\frac{1}{2}} = \sqrt{5}$$