نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

۱

$A\left|\begin{matrix}1\\1\end{matrix}\right. \longrightarrow 1 = 3^{A+B} \Rightarrow A+B=0$

$B\left|\begin{matrix}3\\9\end{matrix}\right. \longrightarrow 9 = 3^{3A+B} \Rightarrow 3A+B=2$

$\Rightarrow A=1, B=-1$

$f(x) = 3^{x-1} \xrightarrow{x=0} 3^{-1} = \frac{1}{3}$ ■

۲

$\log_2^{(4^x+15)} = x+3 \Rightarrow 4^x+15 = 2^{x+3} \Rightarrow 2^{2x} - 8(2^x) + 15 = 0$

$t^2 - 8t + 15 = 0 \longrightarrow (t-3)(t-5) = 0 \longrightarrow 2^x = 3 \Rightarrow x = \log_2^3$

$2^x = 5 \Rightarrow x = \log_2^5$

$\log_2^3 + \log_2^5 = \log_2^{15}$ ■

۳

$(\log_{21}^3)^2 + \log_{21}^{7\times21} \log_{21}^{3\times21} \Rightarrow (\log_{21}^7)^2 + (2-\log_{21}^7)(2+\log_{21}^7)$

$1 + \log_{21}^{\frac{21}{3}} = 1+1-\log^7$

$(\log_{21}^3)^2 + 4 - (\log_{21}^3)^2$ ■

۴

$\log^{(x-1)^2} + 3\log^{(1-x)} = 5 \Rightarrow \log_{10}^{(1-x)^5} = 5$

$(1-x)^5 = 10^5 \Rightarrow x = -9 \xrightarrow{\text{!}} \log_3^9 = 2$ ■

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

$\log_{2^{\frac{1}{3}}}^{2^{\frac{4}{3}}} = \frac{\frac{4}{3}}{\frac{1}{3}} = 4$ ■

۶

$\log_{(x-2)} + 2\log_{(x-2)} = 3 \Longrightarrow (x-2)^3 = 10^3 \Longrightarrow x = -8$ یا 12 ✓

غ ق ق

$\log_{2^{\frac{1}{2}}} 2^3 = \frac{3}{\frac{1}{2}} = 6$ ■

۷

$3^{x^2-2x} = 3^{4x} \Longrightarrow x^2 - 2 = 4x \Longrightarrow x^2 - 4x - 2 = 0$

$x = 2 \pm \sqrt{6}$ $\Longrightarrow$ $\log_6^{(x-2)} = \log_6^{\sqrt{6}}$ ■

غ ق ق

۸

$\log_{18}^{8} = \frac{\log_3^8}{\log_3^{18}} = \frac{3\log_3^2}{2 + 2\log_3^2} = \frac{\frac{15}{8}}{\frac{21}{8}} = \frac{15}{21} = \frac{5}{7}$ ■

۹

$\log_{12}^{6} = \frac{\log_4^{2+3}}{\log_4^{12}} = \frac{0/5 + 0/8}{1 + 0/8} = \frac{1/3}{1/8} = \frac{13}{18}$ ■

۱۰

$a\log 2 - a + b\log 2 = 0 \Longrightarrow (a+b)(\log 2) = a$

$\log_2^{10} = 1 + \frac{b}{a} \Rightarrow \log_2^{10} - 1 = \frac{b}{a} \Rightarrow \frac{b}{a} = \log_2^5$

$(\sqrt{2})^{\log_2 5} = 5^{\log_2^{\sqrt{2}}} = \sqrt{5}$ ■