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

۱

$f \to (1,1) - (3,9)$

$f(1)=1 \to 3^{A+B}=1 \to A+B=0$

$f(3)=9 \to 3^{3A+B}=9 \to 3A+B=2$

$\Rightarrow A=1, B=-1 \to f(x)=3^{x-1}$

$\to f(0)=3^{0-1}=3^{-1}=\frac{1}{3}$

۲

$\log_2^{4x+10} = x+3 \to 4^{x+5} = 2^{x+3} \to (2^x)^2 - 8\times 2^3 + 10 = 0$

$\to (2^x-5)(2^x-2)=0 \to \begin{cases} 2^x-5=0 \to 2^x=5 \to x=\log_2^5 \\ 2^x-2=0 \to 2^x=2 \to x=\log_2^2 \end{cases}$

$\log_2^5 + \log_2^2 = \log_2^{10}$

۳

$\log_{21}^{441} = \log_{21}^{9\times 49} = \log_{21}^9 + \log_{21}^{49} = 2\log_{21}^3 + \log_{21}^{49}$

$(\log_{21}^3)^2 + \log_{21}^{49}(2\log_{21}^3 + \log_{21}^{49}) = (\log_{21}^3)^2 + 2\log_{21}^3 \log_{21}^{49} + (\log_{21}^{49})^2$

$= (\log_{21}^3 + \log_{21}^{49})^2 = (\log_{21}^{147})^2 = (\log_{21}^{21^2})^2 = (2\log_{21}^{21})^2 = 4$

۴

$\log(x^2-2x+1) + 2\log(1-x) = 0 \to \log(1-x)^2 + 2\log(1-x) = 0$

$2\log(1-x) + 2\log(1-x) \to \log(1-x)^2 = 1 \to 1-x=10 \to x=-9$

$\to \log_3^9 = 2$

۵

$\log_2^{(x^2+2x+4)(x-2)} = 3 \to x^3 - 8 = 8 \to x^3 = 16 \to x = \sqrt[3]{16}$

$\to \log_{\sqrt[3]{2}}^{\sqrt[3]{16}} = \log_2^{16} = 4$

آرمین بزرگی

$\to \log_{10}\left(\frac{(2-x)}{\frac{1}{(x-2)^2}}\right)=3 \to -(x-2)^3=1000 \to x-2=-10$

$\to x=-8 \to \log_{\sqrt{2}}^{8} = 3\times 2 = \boxed{6}$ ۶

$3^{(x^2-2)} = 3^{4x} \to x^2-2=4x \to x^2-4x-2=0 \quad x=\frac{4\pm\sqrt{16+8}}{2}$

$x=\frac{4\pm 2\sqrt{6}}{2} = 2\pm\sqrt{6} \quad x\geq 2 \to x=2+\sqrt{6}\ ✓ \to x-2=\sqrt{6}$ ۷

$x=2-\sqrt{6}\ ✗$

$\log_6^{x-2}=\log_6^{\sqrt{6}}=\boxed{\frac{1}{2}}$

$\log_3^2 = \frac{5}{8} \to \log_2^3=\frac{8}{5}$

$\log_{18}^{8}=\frac{\log_2^8}{\log_2^{18}}=\frac{3\log_2^2}{\log_2^9+\log_2^2}=\frac{3}{2\log_2^3+1}=\frac{3}{2\log_2^3+1}=\frac{3}{2\times\frac{8}{5}+1}=\boxed{\frac{5}{7}}$ ۸

$\log_{12}^{6}=\frac{\log_4^6}{\log_4^{12}}=\frac{\log_4^{(3\times2)}}{\log_4^{(3\times4)}}=\frac{\log_4^3+\log_4^2}{\log_4^3+\log_4^4}=\frac{0.8+\frac{1}{2}}{0.8+1}=\frac{1.3}{1.8}=\boxed{\frac{13}{18}}$ ۹

۱۰