نام و نام خانوادگی ....[illegible]...... پاسخنامه تشریحی تکلیف شماره ..۲۴.. کلاس .....یازدهم ریاضی A......

۱

$$x=1 \to y=1\ ,\ x=3 \to y=9 \Rightarrow f(1)=3^{A+B}=1\ ,\ f(3)=3^{3A+B}=9$$

$$\to A+B=0\ ,\ 3A+B=2 \to A=1, B=-1$$

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

۲

$$\log_2^{(4^x+15)}=x+3 \to 2^{x+3}=4^x+15 \to 2^{x+3}=2^{2x}+15$$

$$\to 2^{x+3}-2^{2x}=15 \to 2^x(8-2^x)=15 \xrightarrow{2^x=t} 8t-t^2=15 \to t=3,5$$

$$2^x=3 \to x=\log_2^3\ ,\ 2^x=5 \to x=\log_2^5 \to \log_2^5+\log_2^3=\boxed{\log_2^{15}}$$

۳

$$\left(\frac{\log_7^3}{\log_7^{21}}\right)^2+\frac{\log_7^{147}}{\log_7^{21}}\times\frac{\log_7^{1323}}{\log_7^{21}}=\left(\frac{\log_7^3}{1+\log_7^3}\right)^2+\frac{2+\log_7^3}{1+\log_7^3}\times\frac{2+3\log_7^3}{1+\log_7^3}$$

$$\xrightarrow{1+\log_7^3=t}\left(\frac{t-1}{t}\right)^2+\frac{t+1}{t}\times\frac{3t-1}{t}=\frac{4t^2}{t^2}=4$$

۴

$$x^2-2x+1=(1-x)^2 \to \log(x^2-2x+1)+3\log(1-x)=5 \to 5\log(1-x)=5$$

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

$$\to \log_3^{-x}=\log_3^9=2$$

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$$\log_2^{x^2+2x+4}+\log^{x-2}=3 \to (x^2+2x+4)(x-2)=8 \to x^3-8=8$$

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

$\log_{10}^{2-x} - \log_{10}\frac{1}{(x-2)^2} = \log_{10}^{(2-x)(x-2)^2} = \log_{10}^{(2-x)^3} = 3 \to x=-8$

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

$3^{x^2-2} = 81^x \to 3^{x^2-2} = 3^{4x} \to x^2-4x-2=0 \to x = \frac{4\pm 2\sqrt{6}}{2} = 2\pm\sqrt{6}$

$\xrightarrow{x>0} x = 2+\sqrt{6} \to \log_6^{x-2} = \log_6^{\sqrt{6}} = \frac{1}{2}$ ۷

$\log_{18}^{8} = \frac{\log_3^8}{\log_3^{18}} = \frac{3\log_3^2}{2+\log_3^2} = \frac{\frac{15}{8}}{\frac{21}{8}} = \frac{5}{7}$ ۸

$\log_{12}^{6} = \frac{\log_4^6}{\log_4^{12}} = \frac{\log_4^2+\log_4^3}{\log_4^4+\log_4^3} = \frac{1{,}3}{1{,}8} = \frac{13}{18}$ ۹

$\xrightarrow{x=-1} a\log 2 - a + b\log 2 = 0 \to (a+b)\log 2 = a \ , \ b\log 2 = a(1-\log 2)$

$\xrightarrow{\text{تقسیم}} \frac{b}{a} = \frac{1-\log^2}{\log 2} = \log_2^5 \to (\sqrt{2})^{\frac{b}{a}} = \sqrt{2}^{\log_2^5} = 5^{\log_{\sqrt{2}}^{\sqrt{2}}\frac{1}{2}}$ ۱۰

$= \sqrt{5}$