نام و نام خانوادگی ...النامست اصفهانی... پاسخنامه تشریحی تکلیف شماره ...۲۴... کلاس ...یازدهم تجربی A...

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$y=x^2$ → $x=1 \Rightarrow y=1$ ، $x=3 \Rightarrow y=9$

$f(x)=3^{Ax+B} \xrightarrow{x=1} 1=3^{A+B} \Rightarrow A+B=0$

$\xrightarrow{x=3} 9=3^{3A+B} \Rightarrow 3A+B=2$

$\begin{cases} A+B=0 \\ 3A+B=2 \end{cases}$

$2A=2 \Rightarrow A=1 \,,\, B=-1$

$f(x)=3^{x-1}$ → تعیین به صورت log $\Rightarrow f(0)=3^{-1}=\frac{1}{3}$

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$\log_2(4^x+15)=x+3 \to 2^{(x+3)}=4^x+15 \to 2^x\times 8=2^{2x}+15 \xrightarrow{2^x=t} 8t=t^2+15 \to t^2-8t+15=0$

$\to (t-3)(t-5)=0 \Rightarrow t=3 \,,\, t=5 \to 2^x=3 \Rightarrow x=\log_2 3$

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

مجموع جواب‌ها $\Rightarrow \log_2 3+\log_2 5=\boxed{\log_2 15}$

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$(\log_{21}3)^2+\log_{21}(147)\log_{21}(1323)=(\log_{21}3)^2+\log_{21}(147)\log_{21}(147\times 9)=(\log_{21}3)^2+\log_{21}147(\log_{21}147+2\log_{21}3)=$

$(\log_{21}3)^2+(\log_{21}147)^2+2\log_{21}147\log_{21}3=(\log_{21}3+\log_{21}147)^2=(\log_{21}3\times147)^2=(\log_{21}(21)^2)^2=(2\log_{21}21)^2$

$\to (2\underbrace{\log_{21}21}_{1})^2=4$

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

$10^5=(x-1)^2\times(1-x)^3 \to 10^5=(x-1)^2\times -(x-1)^3 \to 10^5=-(x-1)^5 \Rightarrow x-1=-10 \Rightarrow x=-9$

$\log_3(-x)=\log_3 9=2$

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

$x=\sqrt[3]{16}$

$\log_{\sqrt[3]{2}}x=\log_{\sqrt[3]{2}}\sqrt[3]{16}=\log_{2^{\frac{1}{3}}}16^{\frac{1}{3}}=\log_2 16=4$

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$\log(2-x) - \log\frac{1}{(x-2)^2} = 3 \rightarrow \log(2-x) - \log(x-2)^{-2} = 3 \rightarrow 3\log(2-x) = 3 \rightarrow 2-x = 10 \Rightarrow x = -8$ $\log_{\sqrt{2}}(-x) = \log_{\sqrt{2}} 8 = \log_{2^{\frac{1}{2}}} 2^3 = 6$	۶
$3^{x^2-2} = 81^x \rightarrow 3^{x^2-2} = 3^{4x} \Rightarrow x^2-2 = 4x \rightarrow x^2-4x-2=0 \quad \Delta = 16-4(-2) = 24$ $x = \frac{4 \pm \sqrt{24}}{2} \rightarrow x = 2+\sqrt{6},\ x = 2-\sqrt{6}$ غ ق ق $\log_6(x-2) = \log_6(2+\sqrt{6}-2) = \log_6 6^{\frac{1}{2}} = \frac{1}{2}$	۷
$\log_2 3 = \frac{5}{8} \rightarrow \log_3 2 = \frac{8}{5}$ $\log_{18} 8 = \frac{1}{\log_8 18} = \frac{1}{\frac{1}{3}\log_2 18} = \frac{1}{\frac{1}{3}(\underbrace{\log_2 2 + \log_2 3 + \log_2 3}_{1+\frac{8}{5}+\frac{8}{5}=\frac{21}{5}})} = \frac{1}{\frac{7}{5}} = \frac{5}{7}$	۸
$\log_4 3 = 0/18$ $\log_{12} 6 = \frac{\log_4 6}{\log_4 12} = \frac{\log_4 3 + \log_4 2}{\log_4 3 + \log_4 4} = \frac{0/18 + \frac{1}{2}}{0/18 + 1} = \frac{\frac{13}{10}}{\frac{18}{10}} = \frac{13}{18}$	۹
$(a\log 2)x^2 + ax + b\log 2 = 0 \xrightarrow{x=-1} a\log 2 - a + b\log 2 = 0 \rightarrow a\log 2 + b\log 2 = a \Rightarrow (a+b)\log 2 = a \rightarrow$ $\log 2 = \frac{a}{a+b} \rightarrow \log_2 10 = \frac{a+b}{a} \Rightarrow \underbrace{\log_2 2}_{1} + \log_2 5 = \frac{a+b}{a} \Rightarrow \log_2 5 = \frac{b}{a}$ $(\sqrt{2})^{\frac{b}{a}} = (\sqrt{2})^{\log_2 5} = (5)^{\log_2 \sqrt{2}} = (5)^{\frac{1}{2}} = \sqrt{5}$	۱۰