نام و نام خانوادگی ...حسین حاجی حسینی... پاسخنامه تشریحی تکلیف شماره ...۲۴... کلاس ...B...

۱	$e^{A+B}=1 \Rightarrow A+B=0$ ، $2A+B=2$ $\Big\} \Rightarrow A=1\ ,\ B=-1$ $e^{x-1} \to x=0 \to \frac{1}{e} \to$ نقطه: $(0, \frac{1}{e})$
۲	$2^x \times 8 = 4^{2x}+15 \Rightarrow 2^x=t \Rightarrow 8t=t^2+15 \Rightarrow t^2-8t+15=0$ $t=\{+3, +5\}$ $\log_2 3+\log_2 5=\boxed{\log_2 15}$
۳	(۴) $\log_{21} 147 = 1+\log_{21} 7 \Rightarrow 1+\frac{1}{\log_7 3+1}=\frac{\log_7 3+2}{\log_7 3+1}$ ، $\log_7 3 = a$ $\log_{21} (21\times21\times3) = 2+\log_{21} 3 = 2+\frac{1}{\log_3 7+1}=\frac{2\log_3 7+3}{\log_3 7+1}$ $\frac{a+2}{a+1}\times\left(\frac{\frac{2+3a}{a}}{\frac{1+a}{a}}\right)$ $\log_{21} 3=\frac{1}{\log_3 7+1}=\frac{1}{\frac{1}{a}+1}=\frac{a}{1+a}$ $\left(\frac{a}{1+a}\right)^2+\frac{a+2}{a+1}\times\frac{2+3a}{1+a}=\frac{4a^2+8a+4}{a^2+2a+1}=\boxed{4}$
۴	$x^2-2x+1=t^2$ ، $(1-x)=t$ $\Big\} \Rightarrow \log t^2+\log t^3=5 \Rightarrow \log t^5=5 \Rightarrow t=10$ $x^2-2x+1=100 \Rightarrow x^2-2x-99=0 \to (x+9)(x-11)$ $11 \to$ غ ق ق ، $-9 \to$ ق ق $\log_3 9=\boxed{2}$
۵	$\log_2(x^2+2x+4)+\log_2(x-2)=3 \Rightarrow \log_2 (x^3-8)=3 \Rightarrow 8=x^3-8 \Rightarrow x^3=16$ $x^3=16 \Rightarrow \log_x 16=3 \Rightarrow \log_x 16^{\frac{1}{3}}... = \frac{1}{3} \Rightarrow \frac{1}{4}\log_x 2=\frac{1}{3} \Rightarrow \log_2 x=\frac{4}{3}$ $3\log_2 x=\boxed{4}$

$\log(2-x) - \left(\log \frac{1}{10} + \log (x-2)^2\right) = \log \frac{(2-x)(x-2)^2}{\frac{1}{10}} = 0 \Rightarrow$

$(2-x)(x-2)^2 = 10^0 = -(x-2)^3 \Rightarrow (x-2)^3 = -1 \Rightarrow x = \boxed{1}$

$\log_{\frac{1}{2}} 2^3 = \frac{3}{-1}\log_2 2 = \boxed{-3}$

۶

$e^{x^2-2} = e^{4x} \Rightarrow x^2 - 4x - 2 = 0 \rightarrow x = \frac{4 \pm \sqrt{24}}{2} \Rightarrow 2 \pm \sqrt{6}$

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$\log_4^{2+\sqrt{6}} = \log_4^{x-2}$

۷

$\frac{\log_2^8}{\log_c^{16}} = \frac{\log_c^3 + \log_c^2 + \log_c^1}{2\log_c^3 + \log_c^2} = \frac{10}{12} = \frac{10}{11} = \boxed{\frac{5}{7}}$

۸

$\frac{\log_4^6}{\log_4^{12}} = \frac{\log_4^2 + \log_4^3}{\log_4^3 + \log_4^2} = \frac{13}{18}$

۹

$a + b\left(\log_{10}^2\right) - a = 0 \Rightarrow a + b = \frac{a}{\log 2} \Rightarrow b = a\left(\frac{1}{\log 2} - 1\right)$

$\frac{b}{a} = \frac{1}{\log 2} - 1$ $\quad \sqrt{2}^{\left(\frac{1}{\log 2} - 1\right)} = 2^{\frac{1}{2}\left(\log_2^{10} - 1\right)} = \sqrt{5}$

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