Subject

Date : Year: Month: Day:

* یازدهم دفتر B　* تکلیف شماره ۲۴　* حنانه موسوی

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① $y = x^2 \rightarrow x=1, y=1 \ * \ x=3, y=9$

$x=1 \rightarrow 3^{A+B}=1 \quad A+B=0 \quad -A=B$

$x=3 \rightarrow 3^{3A+B}=9 \rightarrow 3A+B=2 \rightarrow 3A+B=2 \rightarrow 3A-A=2 \rightarrow 2A=2 \rightarrow A=1, B=-1$

$x=0 \rightarrow y=3^{0-1}=$ $\boxed{\frac{1}{3}=}$ نقطه تلاقی

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

$2^x \times 8 = (2^x)^2+15 \xrightarrow{2^x=A} 8A = A^2+15 \rightarrow A^2-8A+15=0 \rightarrow (A-3)(A-5)=0 \rightarrow A=3,5$

$2^x=3, \ 2^x=5 \rightarrow x=\log_2^5 \rightarrow 4^x+15>0 \checkmark$

$\hookrightarrow x=\log_2^3 \rightarrow 4^x+15>0 \checkmark$　$\boxed{\log_2^3+\log_2^5=\log_2^{15}}$

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③ $(\log_{21}^3)^2 + (\log_{21}^7+\log_{21}^{21})(\log_{21}^3+2\log_{21}^{21}) \Rightarrow \log_{21}^7 = 1-\log_{21}^3$

$(\log_{21}^3)^2 + (2-\log_{21}^3)(2+\log_{21}^3) \Rightarrow (\log_{21}^3)^2 + 4 - (\log_{21}^3)^2 \boxed{=4}$

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④ $x^2-2x+1=(1-x)^2 \rightarrow \log(1-x)^2+3\log(1-x)=5 \rightarrow 5\log(1-x)=5$

$\log(1-x)=1 \rightarrow 1-x=10 \rightarrow x=-9, \ 1-x \xrightarrow{x=-9} 1+9>0 \checkmark \rightarrow \boxed{\log_3^9=2}$

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⑤ $x^2+2x+4 \rightarrow \Delta<0 \rightarrow$ همیشه مثبت $, \ x-2>0 \rightarrow x>2$

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

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

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⑥ $\log^{2-x} - \log^{(2-x)^{-2}} = 3 \rightarrow \log^{2-x} - (-2)\log^{(-x+2)} = 3\log^{2-x} = 3 \rightarrow \log^{2-x}=1$

$10=2-x \quad x=-8 \rightarrow 2-x>0 \rightarrow x<2 \rightarrow x=-8 \checkmark \rightarrow \log_{\sqrt{2}}^{-x} = \log_{\sqrt{2}}^8 = \boxed{6\log_2^2=6}$

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⑦ $81^x = (3^4)^x = 3^{x^2-2} \rightarrow 4x = x^2-2 \rightarrow x^2-4x-2=0 \rightarrow (x-2)^2=6$

$x = 2+\sqrt{6}, \ 2-\sqrt{6}$ (غقق) $\rightarrow \log_6^{2+\sqrt{6}-2} = \boxed{\log_6^{\sqrt{6}} = \frac{1}{2}}$

$x-2>0$

$x>2 \checkmark$

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⑧ $\log_{18}^8 = \frac{\log_2^8}{\log_2^{18}} = \frac{3}{\log_2^9+1} = \frac{3}{2\log_2^3+1} = \frac{3}{2(\frac{8}{5})+1} = \frac{3}{\frac{21}{5}} \boxed{=\frac{5}{7}}$

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ضیا نیرومند

$$\log_{12}^{4} = \frac{\log_{\varepsilon}^{4}}{\log_{\varepsilon}^{12}} = \frac{\log_{\varepsilon}^{2} + \log_{\varepsilon}^{3}}{\log_{\varepsilon}^{4} + \log_{\varepsilon}^{3}} = \frac{\frac{1}{2} + \log_{\varepsilon}^{3}}{1 + \log_{\varepsilon}^{3}} = \frac{\frac{1}{2} + \frac{8}{18}}{1 + \frac{8}{10}} = \frac{\frac{13}{10}}{\frac{18}{10}} = \boxed{\frac{13}{18}}$$ (گ) (۹)

$$x = -1 \rightarrow a\log 2 - a + b\log 2 = 0 \rightarrow (a+b)\log 2 = a \xrightarrow{\div a} \left(1 + \frac{b}{a}\right)\log 2 = 1$$ (ر) (۱۰)

$$\left(1 + \frac{b}{a}\right) = \frac{1}{\log 2} = \log_{2}^{10} \rightarrow \frac{b}{a} = \log_{2}^{10} - 1 = 1 + \log_{2}^{5} - 1 = \log_{2}^{5} = \frac{b}{a}$$

$$\sqrt{2}^{\log_{2}^{5}} = 5^{\log_{2}^{\sqrt{2}}} = 5^{\frac{1}{2}} = \boxed{\sqrt{5}}$$