زهرا الاردانی یازدهم دختر تکلیف ۲۶

-۱

$f(x)=3^{Ax+B}$ و $y=x^2$ طول نقاط تقاطع: $1, 3 \to \left|\begin{matrix}1\\1\end{matrix}\right|$ و $\left|\begin{matrix}3\\9\end{matrix}\right|$

$\begin{cases}A+B=0\\3A+B=2\end{cases} \to 2A=2 \to \boxed{A=1} \to A+B=0,\ A=1 \to \boxed{B=-1}$

عرض نقطه تلاقی تابع f با محور y ها $=\frac{1}{3}$

-۲

$\log_2(4^x+15)=x+3 \to 4^x+15=2^x \times 8$

$\to (2^x-3)(2^x-5)=0 \to x_1=\log_2 3$ و $x_2=\log_2 5$

$\to \log_2 3+\log_2 5=\boxed{\log_2 15}$

-۳

$(\log_{21} 3)^2+\log_{21}(147)\log_{21}(1323)=(\log_{21} 3)^2+4-(\log_{21} 3)^2=4$

21×7 ، 21×63

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

$1-\log_{21} 3$ $=4-(\log_{21} 3)^2$

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

$\log(x-1)^2(1-x)^3=5 \to \log(1-x)^5=5 \to 10^5=(1-x)^5$

$\to 10=1-x \to x=-9 \to \log_3^{-(-9)}=2$

۵- $\log_2(x^2+2x+4) + \log_2(x-2) = 3 \qquad \log_{\sqrt[3]{2}}^{x} =$

$\log_2^{x^3-8} = 3 \to x^3-8 = 8 \to x = 2\sqrt[3]{2} \to \log_{\sqrt[3]{2}}^{2\sqrt[3]{2}} = 4$

۶- $\log(2-x) - \log\frac{1}{(x-2)^2} = 3$

$\log\frac{1}{(2-x)^2} = \log(2-x)^{-2} = -2\log(2-x)$

$3\log(2-x) = 3 \to 2-x = 10 \to x = -8 \qquad \log_{\sqrt{2}}^{-(-8)} = 6$

۷- $3^{x^2-2} = 81^x = 3^{4x} \qquad \log_6^{x-2} = \log_6^{\sqrt{6}} = \frac{1}{2}$

$x^2-2 = 4x \to x^2-4x+4-6 = 0 \to (x-2)^2 = 6 \to x-2 = \sqrt{6}$

۸- $\log_3^2 = \frac{5}{8} \qquad \log_{18}^8 = \frac{3\log 2}{\log 2 + 2\log 3} = \frac{3(5a)}{5a+2(8a)} = \frac{15a}{21a} = \frac{5}{7}$

یا $\frac{\log 2}{\log 3} = \frac{5}{8} \to \log 2 = 5a$

$\log 3 = 8a$

۹- $\log_4^3 = 0/8 \qquad \log_{12}^6 = \frac{\log 2 + \log 3}{2\log 2 + \log 3} = \frac{5a+8a}{10a+8a} = \frac{13a}{18a} = \frac{13}{18}$

$\frac{\log 3}{2\log 2} = \frac{4}{5} \to \frac{\log 3}{\log 2} = \frac{8}{5} \to \log 3 = 8a, \ \log 2 = 5a$

۱۰- $(a\log 2)x^2 + ax + b\log 2 = 0 \qquad (\sqrt{2})^{\frac{b}{a}} =$

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

$\to \frac{1}{\log_2^{10}} = \frac{a}{a+b} \to \log_2^{10} = \frac{a+b}{a} = 1 + \frac{b}{a} \to \log_2^{10} - 1 = \frac{b}{a} \to \frac{b}{a} = \log_2^5$

$\log_2^2$

$(\sqrt{2})^{\log_2^5} = 5^{\log_2^{\sqrt{2}}} = \sqrt{5}$