نام و نام خانوادگی .... پاسخنامه تشریحی تکلیف شماره .... کلاس ...یازدهم B...

۱۹

۱ (۲)

$A\left|\begin{matrix}1\\1\end{matrix}\right. \longrightarrow 1 = 3^{A+B} \Longrightarrow A+B=0$

$B\left|\begin{matrix}3\\9\end{matrix}\right. \longrightarrow 9 = 3^{3A+B} \Longrightarrow 3A+B=2$ } $(A=1,\ B=-1)$

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

۲ (۲)

$\log_2^{(4^x+15)} = x+3 \Longrightarrow 4^x+15 = 2^{x+3} \Longrightarrow 2^{2x} - 8(2^x)+15=0$

$t^2-8t+15=0 \longrightarrow (t-3)(t-5)=0 \longrightarrow 2^x=3 \Rightarrow x=\log_2^3$

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

$\log_2^3+\log_2^5 = \log_2^{15}$

۳ (۲)

$(\log_{21}^3)^2 + \log_{21}^{7\times21}\log_{21}^{3\times21^2} \Rightarrow (\log_{21}^3)^2 + (2-\log_{21}^3)(2+\log_{21}^3)$

$1+\log_{21}^{\frac{21}{3}} = 1+1-\log^3$

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

۴ (۲)

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

$(1-x)^5 = 10^5 \Rightarrow x=-9 \longrightarrow \log_3^9 = 2$

۵ (۲)

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

$\log_{2^{\frac{1}{3}}}^{2^{\frac{4}{3}}} = \frac{\frac{4}{3}}{\frac{1}{3}} = 4$

۶ (۲)

$\log_{(x-2)} + 2\log_{(x-2)} = 2 \Rightarrow (x-2)^3 = 10^2 \Rightarrow x = -8$ ✓ یا 12 ✓

غ ق ق

$\log_{2^{\frac{1}{2}}} 2^3 = \frac{3}{\frac{1}{2}} = 6$ ✓

۷ (۱)

$3^{x^2-2x} = 3^{4x} \Rightarrow x^2 - 2 = 4x \Rightarrow x^2 - 4x - 2 = 0$ $x = \frac{-b \pm \sqrt{\Delta}}{2a}$

$x = 2 \pm \sqrt{6}$ $\Rightarrow \log_6 (x-2) = \log_6 \sqrt{2}$ $\log_{2+\sqrt{6}-2}^{4} = \frac{1}{2}$

غ ق ق $x = \frac{4 \pm 2\sqrt{6}}{2} = \begin{cases} 2-\sqrt{6} & \times \\ 2+\sqrt{6} & \checkmark \end{cases}$

۸ (۲)

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

۹ (۲)

$\log_{12}^{6} = \frac{\log_4^{2+3}}{\log_4^{12}} = \frac{0/5 + 0/8}{1 + 0/8} = \frac{1/3}{1/8} = \frac{13}{18}$ ✓

۱۰ (۲)

$a\log 2 - a + b\log 2 = 0 \Rightarrow (a+b)(\log 2) = a$

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

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