سوال ۱)

$f(a) = a^{3A+B}$ $\xrightarrow{x=3}$ $3^2 = 3^{3A+B}$ $\Rightarrow 3A+B=2$

$y = a^x$ $\xrightarrow{x=1}$ $1^2 = 3^{A+B}$ $\Rightarrow A+B=0$ ✓

$A=1$ $B=-1$

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

سوال ۲)

$\log_2^{(4^x+10)} = x+3 \rightarrow 2^{(x+3)} = 4^x + 10 \rightarrow 2^x = t$

$t^2 + 10 = 8t \rightarrow t^2 - 8t + 10 = 0 \rightarrow (t-5)(t-2)$ ✓

$2^x = 5$ $\log_2^5 = x$ $\xrightarrow{x}$ $\log_2^{3\times5} = \log_2^{15}$

$2^x = 3$ $\log_2^3 = x$

سوال ۳)

$(\log_{11}^3)^2 + \log_{21}^{147} \times \log_{21}^{1323} \rightarrow 21^2 \times 3$

$(\log_{11}^3)^2 + (2 - \log_{21}^3)(2 + \log_{21}^3) = -(\log_{21}^3)^2 + 4$ ✓

لا تخابیت ع می شود

سوال ۴)

$\log(x^2 - 18x + 1) + 3\log(1-x) \geq 0$

$-(x-1)^2(x-1)^3 \geq 10$ $\Rightarrow -(x-1)^5 \geq 10$ ✓

$x-1 \leq -1$

$x \leq -9$

$\log_3^{(-x)} \leq \log_3^{3^2}$ ✓

Subject: Date:

سوال ۵)

$\log_2^{(x^2-4x+4)} + \log_2^{(x-2)} = 3$ ← ضرب

$x^3 - 8 = 3 \log_2^2 \rightarrow 2^4$ ↪ $x^3 - 8 = 8 \rightarrow x^3 = 16$

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

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

سوال ۶)

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

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

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

$2 - x = 10$

$x = -8$

$\log_{\sqrt{2}}^{8} \Rightarrow \frac{3}{\frac{1}{2}} = 6$

سوال ۷)

$81^x = 3^{x^2-2} \rightarrow 4x = x^2 - 2$

$x^2 - 4x - 2 = 0$

$\frac{4 \pm \sqrt{16+8}}{2} = 2 \pm \sqrt{6}$

$\log_6^{2+\sqrt{6}-2} = \frac{1}{2}$

سوال ۸)

$\log_{\frac{1}{8}}^{x} = 2$ ← $\log_2^8 = 3$

$\log^{2^3} \rightarrow \frac{3}{\frac{1}{3}} = \frac{15}{4} = \frac{5}{4}$

$\begin{cases} 3^{\frac{5}{8}} = 2 \\ 2^{\frac{5}{8}} = 3 \end{cases}$

Subject: Date:

سوال ۹

$\log_{12}^{6} \rightarrow \frac{2\times 3}{2^2\times 3} \Rightarrow \frac{2^{1/4}\times 2}{2^{1/4}\times 2^2}$

$\log_{12}^{6} \in 2.18$

$2^{1/4} = 3$

$\log_{2^{4/9}}^{2^{2/9}} = \frac{2/9}{4/9} = \frac{12}{18}$ ✓

سوال ۱۰

$a(\log 2)x^2 + ax + b\log 2 > 0$ ✓

$x = -1 \rightarrow (\log_{10}^{2})(a+b) = a$

$\log_{10}^{2} = \frac{a}{a+b}$

$\log_{10}^{2} = \frac{a+b}{a} = 1 + \frac{b}{a}$

$\log_{2}^{10} - 1 \leftarrow \frac{b}{a}$

$\log_{2}^{5} \leftarrow$

$\sqrt{2}^{\log_2^5} \rightarrow 5^{\log_2^{\sqrt{2}}} = \sqrt{5}$

$(\sqrt{2})^{\frac{b}{a}}$

$\log_{10}^{2} = \frac{1}{a+b}$