۱)

3^{Ax+B} , x^2

$3^{A+B} = 1 \Rightarrow A+B=0$

$3^{3A+B} = 9 \Rightarrow 3A+B=2$

$\boxed{A=1,\ B=-1}$

$3^{Ax+B} \Rightarrow 3^{x-1} \xrightarrow[\text{تلاقی با محور } y]{x=0} 3^{-1} = \frac{1}{3}$

۲)

$4^x + 15 = 2^{x+3} \xrightarrow{2^x = t} t^2 - 8t + 15 = 0$

$(t-5)(t-3)=0$

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

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

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

۳)

$(\log_{21} 3)^3 + \log_{21}(147) \log_{21} 1323$ $\quad \log_{21} 7 = 1 - \log_{21} 3$

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

$t^3 + ((1-t)+1)(t+2) =$ ($2-t$)

$t^3 + 4 - t^2 = \boxed{4}$

۴)

$2\log_5 \ , \ (2) \ \ 3\log_5 = 5$ $\quad 5\log_5 (1-x) = 5$

$\log_5 (1-x) = 1$

$1-x = 10$

$\boxed{x=-9}$

$\log_3 (-1-9) = \boxed{2}$

۱۰)

$a\log 4 - a + b\log 2 = 0 \quad (a+b)\log 2 = 5 \quad 10^a = 2^{a+b}$

$2^a \times 5^a = 2^a \times 2^b$

$5^a = 2^b \Rightarrow \boxed{2^{\frac{b}{a}} = 5}$

$2^{\frac{b}{2a}} = (2^{\frac{b}{a}})^{\frac{1}{2}} = \boxed{\sqrt{5}}$

Date: Subject:

$\log_{2}^{x^{2}-8} = 2 \quad x^{2}-8=8 \quad x=2^{4/2}$ (د)

$\log_{2^{\frac{1}{2}}}^{2^{\frac{4}{2}}} = \frac{\frac{4}{2}}{\frac{1}{2}} =$ (ف)

(ی)

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

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

$\log_{\sqrt{2}}^{-(-8)} = \frac{2}{\frac{1}{2}} =$ (ی)

(ب)

$x^{2}-2 = 4x \Rightarrow (x-2)^{2}-4-2=0$

$x-2=\sqrt{6} \quad \log_{4}^{\sqrt{4}} =$ $\frac{1}{2}$

(ه)

$\log_{18}^{8} = \frac{3\log_{18}^{2}}{} = \frac{3}{\log_{2}^{18}} = \frac{3}{\log_{2}^{2}+2\log_{2}^{3}} =$

$\frac{3}{1+2,2} = \frac{30}{22} =$ $\frac{5}{7}$

$\log_{2}^{3} = \frac{1}{0,3} = 1,4$

(ط)

$\frac{1}{\log_{4}^{12}} = \frac{1}{1+\log_{4}^{3}} = \frac{1}{1+\frac{1}{\log_{3}^{4}}} = \frac{1}{1+\frac{1}{1+\log_{2}^{3}}} = \frac{1}{1+\frac{1}{2,4}}$

$\log_{4}^{2} = \frac{1}{2}\log_{2}^{3} = 0,8 \Rightarrow \log_{2}^{3} = 1,4$ $\rightarrow \frac{1}{\frac{24}{24}} = \frac{24}{24} =$ $\frac{13}{18}$

MAHAN