

Math 105 TOPICS IN MATHEMATICS

SOLUTION FOR QUIZ – IX (04/01)

April 1 (Wed), 2015

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[I] (2pts) $8^x = 5^{\boxed{(\log_5 8) x}}$.

$13^x = e^{\boxed{(\ln 13) x}}$.

[II] (2pts) $9 = 4^{\boxed{\log_4 9}}$.

$22 = e^{\boxed{\ln 22}}$.

[III] (2pts)

(a) $\frac{1}{\log_7 6} = \log_{\boxed{6}} \boxed{7}$. (b) $\frac{1}{\log_{18} 31} = \log_{\boxed{31}} \boxed{18}$.

[IV] (4pts) (1) $\log_3 27 = 3$. (2) $\log_{10} 100000 = 5$.

(3) $\log_5 \frac{1}{625} = -4$. (4) $\log_4 \frac{1}{1024} = -5$.

[V] (2pts)

(1) $\log_5 5^{\sqrt{7}} = \sqrt{7}$. (2) $e^{\ln 16} = 16$.

[VI] (2pts)

(1) $\frac{\log_3 7}{\log_3 4} = \log_{\boxed{4}} \boxed{7}$. (2) $\frac{\log_7 41}{\log_7 e} = \ln \boxed{41}$.

[VII] (8pts) (1) $(\ln 100) - (\ln 20) = \ln \boxed{5}$.

(2) $2 \ln 3 = \ln \boxed{9}$.

(3) $\ln 243 = \boxed{5} (\ln 3)$.

(4) $\ln \sqrt[5]{128} = \frac{\boxed{7}}{\boxed{5}} (\ln 2)$.

(5) $e^{(\ln 4)+(\ln 11)} = 44$.

(6) $e^{3(\ln 2)} = 8$.

(7) $\ln 8^{\frac{1}{\ln 8}} = 1$.

(8) $8^{\frac{1}{\ln 8}} = e$.