MATH 12 CH.4 – EXTRA PROBLEMS

① SOLVE THE FOLLOWING EQUATIONS:

A) $5^{1-2y} = \sqrt{5}$ B) $3^z = 9\sqrt{3}$

④ FIND THE FOLLOWING:

A) $\log_9 27$ B) $\log_4 \frac{1}{32}$ C) $\log_{25} 5\sqrt{5}$

③ FOR EACH OF THE FOLLOWING FUNCTIONS, FIND $f^{-1}(y)$:

A) $f(x) = \log_2 (3x-5)$

B) $f(x) = e^{4x-3}$

④ SIMPLIFY:

A) $\ln e$ B) $\ln \sqrt{e}$ C) $\ln \frac{1}{e^4}$ D) $(\ln e)^{-4}$

⑤ SIMPLIFY $3^{2\log_3 5} - 12 \log_5 \sqrt[3]{5}$.

⑥ FIND ALL SOLUTIONS OF THE FOLLOWING EQUATIONS:

A) $\ln (x^3) = 3 \ln x$

B) $(\ln x)^3 = 3 \ln x$

⑦ SOLVE THE EQUATION $\ln x + \ln (x+1) = \ln 12$.

⑧ SOLVE THE EQUATION $(\ln x)^2 - \ln (x^2) - 15 = 0$.

⑨ SOLVE THE INEQUALITY $2^{5-x} > 8$.

⑩ SOLVE THE INEQUALITY $e^x \leq 5$.

⑪ SOLVE THE FOLLOWING INEQUALITIES:

A) $\ln (x-4) < 2$

B) $\log_2 \left(\frac{2x-1}{x-2} \right) < 0$

⑫ SOLVE THE INEQUALITY $0 < \ln (5-x) < 2$.

⑬ SOLVE THE EQUATION $e^x - 10e^{-x} = 3$.

⑭ SIMPLIFY THE EXPRESSION

$$\left(\frac{e^x + e^{-x}}{2} \right)^2 - \left(\frac{e^x - e^{-x}}{2} \right)^2.$$