Math 16  Review for exam 1:

General idea of an inverse function; calculating the formula for an inverse function; graphing an
inverse function. Calculating the derivative of an inverse function in specific cases important to us: 
$ln(x)$ from $e^x$, and inverse trig functions.

exponential functions $e^x$, and more generally $a^x$. What’s $e$? Graphs of $e^x$, $e^{-x}$, etc. Properties of exponential functions. Switching bases from $a$ to $e$. Basic derivatives and integrals involving exponential functions. $D(a^x), \int a^x dx$

logarithms: $ln(x)$ and $\log_a x$. Graphs; properties of logarithms. Basic derivatives and integrals involving logs.

Inverse trig functions. Definitions and graphs. Derivatives & how to derive them.

Derivative and integrals involving all these functions. Simple substitutions leading to integrals 
$\int \frac{1}{u} du, \int e^u du$, etc. Using integration by parts to evaluate standard integrals. Using reduction formulas to evaluate integrals. Definite integrals.

Graphical behavior of functions: locating maximum and inflection points, vertical and horizontal asymptotes.

L’Hospital’s rule for indeterminate forms 0/0 or $\infty/\infty$. Other indeterminate forms $0 \cdot \infty$, 
$0^0$, $\infty^0$, $1^\infty$

Integration by parts.