Objective: To evaluate and rewrite functions using the natural logarithm.

Warm Up: Evaluate.

A.) $\log 100 = x$

B.) $\log 10 = x$

When working with logarithms, there were many instances when we did not see a subscript beside the abbreviation "log" to indicate the base. We assume when a base is not present, the logarithm has base of 10 by default.

Key Term:
Natural logarithm (natural log) is a specific type of logarithm that has a different base, e.

The natural log is abbreviated as ln and it works identically to $logs$.

$$e^x = a$$ is equivalent to $$\log_e a = x$$ which is the same as $$\ln a = x$$

Example 1: Rewrite the following in logarithmic form

A.) $e^0 = 1$

B.) $e^1 = e$

C.) $e^{10} = 27.18$

Example 2: Rewrite the following in exponential form

A.) $\ln 6 = x$

B.) $\ln e = 1$

C.) $\ln 148.41 = 5$

Example 3: Evaluate. If necessary, round to the nearest tenth.

A.) $e^4 e^7$ B.) $\quad e^{-3} e^7$ C.) $e^9 + e^0$

D.) Solve $4 \ln x = 23$ E.) Solve $5 \ln 3x = 14$

F.) Solve $6(e^{x+1}) = 1{,}000{,}000$ G.) Solve $-3(e^{2x-3}) = -469.016$