

Math 16C

Kouba

Properties of Logarithms and Exponents- Review

### Properties of Exponents

1.)  $x^m \cdot x^n = x^{m+n}$

2.)  $\frac{x^m}{x^n} = x^{m-n}$

3.)  $(x^m)^n = x^{mn}$

4.)  $(xy)^m = x^m \cdot y^m$

5.)  $\left(\frac{x}{y}\right)^m = \frac{x^m}{y^m}$

### Properties of Logarithms

1.)  $\ln 1 = 0$

2.)  $\ln e = 1$

3.)  $\ln e^x = x$

4.)  $e^{\ln x} = x$

5.)  $\ln(xy) = \ln x + \ln y$

6.)  $\ln\left(\frac{x}{y}\right) = \ln x - \ln y$

7.)  $\ln x^y = y \cdot \ln x$

COMMON MISTAKES (NONE OF THE FOLLOWING ARE TRUE.)

1.)  $\ln(x + y) = \ln x + \ln y$

2.)  $\ln(x - y) = \ln x - \ln y$

3.)  $\ln(xy) = \ln x \cdot \ln y$

$$4.) \ln \left( \frac{x}{y} \right) = \frac{\ln x}{\ln y}$$

$$5.) \frac{\ln x}{\ln y} = \ln x - \ln y$$

$$6.) \ln x^y = (\ln x)^y$$