

Name \_\_\_\_\_

Date \_\_\_\_\_

Advanced Algebra

Unit 3: exponential, Log and Power Functions.

**Inverse of Exponential...Log Functions**

**Assignment #12**

**Important Log Properties**

**1)  $\log_a(uv) = \log_a u + \log_a v$       Product Property**

**2)  $\log_a \frac{u}{v} = \log_a u - \log_a v$       Quotient Property**

**3)  $\log_a u^n = n \log_a u$       Power property**

Class Examples Together:

1)  $\log_{10} \frac{2}{3}$

2)  $\log_{10} 6$

3)  $\log_{10} 9$

**I can Re-write the logarithm of a product**

Re-Write  $\log_{10} 7x^3$

**I can use log properties to condense a expression**

Condense  $\log_{10} x - \log_{10} 3$

Condense  $\log_{10} 2 - 2\log_{10} x$

**I can expand a logarithmic Expression**

Expand  $\log_2 3xy^2$

**Classwork: Use the log rules to expand the following expressions**

1)  $\log_2 3x$

2)  $\log_8 16x$

3)  $\log_{10} 2x^3$

4)  $\log_4 \frac{6}{5}$

5)  $\log_5 9$

6)  $\log_6 \frac{10}{3}$

7)  $\log_3 x^3$

8)  $\log_3 6xy$

9)  $\log_{10} 7x^3yz$

**Use the log rules to condense the expression:**

1)  $\log_5 6 - \log_5 4$

2)  $\log_3 13 + \log_3 3$

3)  $2\log_{10} x + \log_{10} 5$

4)  $5\log_4 12 - 5\log_4 2$

5)  $3\log_3 19 - 3\log_3 38$

6)  $\log_7 48 - 4\log_7 2$

7)  $\log_{10} 8 + \log_{10} x + 2\log_{10} y$

8)  $\log_{10} 6 - 3\log_{10} \frac{1}{3}$

