Name: _____   Date: _____

Learning Goal 8.1	Solving exponential and logarithmic equations with same base and with different bases, including base e.

Example Recall that

$$\log_b b =$$

and since logarithms and exponentials are opposite operations,

$$\log_b b^c =$$

Power Law

Example Recall that $c^x c^y = c^{x+y}$, and let's extend that to logarithms.

Product Law

Example Recall that $c^x/c^y = c^{x-y}$, and let's extend that to logarithms.

Quotient Law

Example Write each expression in terms of individual logarithms.

    a. $\log_6 \dfrac{xy}{z}$

    b. $\log_7 \sqrt{xy}$

Example Simplify using logarithm laws.

    a. $\log 25 + \log 4$

    b. $\log_5 50 - \log_5 0.4$

    c. $3 \log_3 6 - 4 \log_3 2 + \dfrac{1}{2} \log_3 4$

Example If $\log_2 5 = p$, express each logarithm in terms of p.

    a. $\log_2 20$

    b. $\log_2 \left(\dfrac{\sqrt[3]{5}}{2} \right)$