

Log Rules WS

Name:

Rules

1. Adding: Because $2^3 \cdot 2^2 = 2^{3+2}$

$$\log_b xy = \log_b x + \log_b y$$

2. Subtracting: Because $\frac{2^3}{2^2} = 2^{3-2}$

$$\log_b \frac{x}{y} = \log_b x - \log_b y$$

3. Multiplying: Because $(2^3)^2 = 2^{3 \cdot 2}$

$$\log_b x^y = y \log_b x$$

4. Converting base a to base b :

$$\log_b x = \frac{\log_a x}{\log_a b}$$

Now try these:

1. Expand $\log_b 2x =$
2. Express as a single logarithm $\log_b 2 + \log_b x =$
3. Expand $\log_b \frac{x}{3} =$
4. Express as a single logarithm $\log_b x - \log_b 3 =$
5. Expand $\log_b 5^x =$
6. Express as a single logarithm $x \log_b 5$
7. Without a calc, find $e^{\ln 4} =$
8. Without a calc, find $11^{\log_{11} 5} =$
9. Without a calc, find $\log_9 3 + \log_9 27 =$
10. Without a calc, find $\log_8 16 - \log_8 2 =$

11. Without a calc, find $\log_3 8 \cdot \log_8 9 =$