

Baldwin's Rules of Exps

0] An exponent acts on and only on the thing to its left.

$$1] a^m = \underbrace{a \times a \times a \times \dots \times a}_{m \text{ times}}$$

$$2] a^m * a^n = a^{m+n}$$

$$3] (a^m)^n = a^{m*n}$$

$$4] \frac{a^m}{a^n} = a^{m-n}, \forall a \neq 0$$

$$5] a^0 = 1, \forall a \neq 0$$

$$6] a^{-1} = \frac{1}{a}, \forall a \neq 0 \text{ and } a = \frac{1}{a^{-1}}, \forall a \neq 0$$

$$7] a^{1/m} = \sqrt[m]{a}, \quad a \text{ must be non-negative if } m \text{ is even.}$$

$$8] a^{m/n} = \sqrt[n]{a^m}, \quad a^m \text{ must be non-negative if } n \text{ is even,}$$
$$a^{m/n} = (\sqrt[n]{a})^m, \quad a \text{ must be non-negative if } n \text{ is even.}$$

$$9] \sqrt[n]{ab} = \sqrt[n]{a} \sqrt[n]{b}, \forall a, b \geq 0$$

$$10] \sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}, \forall a, b \geq 0$$

11] There are more exponent rules.



Baldwin's Rules of Logs

0] $a = b^c \Leftrightarrow \log_b a = c$

1] $\log_a a = 1$

2] $\log_a 1 = 0$

3] $a^{\log_a x} = x$

4] $\log_a PQ = \log_a P + \log_a Q$

5] $\log_a \frac{P}{Q} = \log_a P - \log_a Q$

6] $\log_a P^Q = Q \log_a P$

7] $\log_a a^x = x$

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

9] $\log_b a = \frac{1}{\log_a b}$

10] $\log_b \left(\frac{1}{a}\right)^n = -\log_b a^n$

11] There are more log rules.



