Powers: Exponent Rules

Exponent Rules

For $a > 0$, $b > 0$, x, y, *and* n *Real Numbers*

1. $a^x = a^y \iff x = y$
2. $a^x a^y = a^{x+y}$
3. $\frac{a^x}{a^y} = a^{x-y}$
4. $a^{-x} = \frac{1}{a^x}$
5. $(a^x)^y = a^{xy}$
6. $a^x b^x = (ab)^x$
7. $a^{\frac{x}{y}} = \sqrt[y]{a^x} = (\sqrt[y]{a})^x$ for x and y integers > 1
8. $a^0 = 1$
9. $a^1 = a$
10. $1^x = 1$