

# How to simplify exponents

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## Rules of exponents:

1.

$$a^x \cdot a^y = a^{x+y}.$$

2.

$$(a^x)^y = a^{x \cdot y}.$$

3.

$$a^{-x} = \frac{1}{a^x}.$$

4.

$$\frac{1}{a^{-x}} = a^x.$$

5.

$$a^x \cdot a^y = a^{x+y}.$$

6.

$$a^{\frac{x}{y}} = \left(a^{\frac{1}{x}}\right)^y = (a^y)^{\frac{1}{x}} = \sqrt[y]{a^x}.$$

7.

$$(a^x \cdot b^y)^z = a^{x \cdot z} \cdot b^{y \cdot z}.$$

## How to Simply exponential expressions:

**Step 1.** Repetitively apply the rules of exponents.

**Step .If**