

# Rational Exponents

Anything raised to a rational exponent is a \_\_\_\_\_.

The rational exponent  $\frac{1}{n}$  indicates the  $n$ th root of the base.

$$x^{\frac{1}{n}} = \sqrt[n]{x}, n > 1, n \in R, x \neq 0$$

## Examples

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$$x^{\frac{m}{n}} = \left(x^{\frac{1}{n}}\right)^m = \sqrt[n]{x^m}, m \in Z, m > 0, n \in Z, n > 0, x \neq 0$$

## Examples

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## Big Questions

Evaluate.

$$81^{\frac{1}{2}} - 8^{\frac{1}{3}} - 32^{\frac{4}{5}} + 16^{\frac{3}{4}} + 1^{\frac{2}{9}}$$

Simplify, then evaluate.

$$\frac{\left(8^{\frac{4}{3}}\right)^{\frac{1}{2}}}{8^{\frac{7}{6}}\sqrt{8}}$$