1.2 Exponents and radicals

For an integer and a real number, define

Also if is a real number and is an integer, we define and

EXAMPLES

Laws of Exponents

1.

2.

3.

4.

5.

EXAMPLES

More Laws of Exponents

EXAMPLE

Scientific notation

Decimal to Scientific

Scientific to Decimal
Radicals

The symbol \( \sqrt[n]{a} \) means “the \( n \)-th root of” \( a \).

\( \sqrt[n]{a} \) means \( a^{\frac{1}{n}} \) and

If \( n \) is an integer, then the \( n \)-th root of \( a \) is defined as follows:

\( \sqrt[n]{a} \) means \( a^{\frac{1}{n}} \)

If \( a \) is \( b \) then it must be that \( b \) and

EXAMPLES

Properties of \( n \)-th Roots

1. 
2. 
3. 
4. 
5. 

EXAMPLES

Rational exponents

For a fractional exponent \( \frac{m}{n} \) in terms, where \( m \) and \( n \) are integers, we define

\( a^{\frac{m}{n}} \) or equivalently

If \( a \) is \( b \) then it must be that

Note: All the Laws for \( a^{m} \) hold for \( a^{\frac{m}{n}} \) exponents.

EXAMPLES