Rational Exponents

Preliminaries and Objectives

Preliminaries

- Integer Exponents
- Laws of Exponents

Objectives

- Define Rational Exponents

Recap

If $b > 0$, then

$$\begin{aligned} b^{\frac{m}{n}} &= \left(\sqrt[n]{b}\right)^m \\ &= \sqrt[n]{b^m} \end{aligned}$$

Rational Exponents

$$8^{\frac{1}{3}} = \sqrt[3]{8} = 2$$

$$8^{\frac{2}{3}} = \left(\sqrt[3]{8}\right)^2 = 2^2 = 4$$

$$8^{\frac{2}{3}} = \sqrt[3]{8^2} = \sqrt[3]{64} = 4$$

Recap

If $b > 0$, then

$$\begin{aligned} b^{\frac{m}{n}} &= \left(\sqrt[n]{b}\right)^m \\ &= \sqrt[n]{b^m} \end{aligned}$$