

UNIDAD 1: Números Reales

7. Radicales.

Definición 1. Radical

$$\sqrt[n]{a} = b \Leftrightarrow b^n = a$$

↓ ↓
Indice radical
radicando

Ejemplos

$$\begin{aligned} \rightarrow \sqrt[4]{16} &= \pm 2 & \rightarrow \sqrt[6]{-64} &= \cancel{7} \\ \rightarrow \sqrt[3]{8} &= 2 & \rightarrow \sqrt[5]{-243} &= -3 \end{aligned}$$

Definición 2. Exponente fraccionario

$$\begin{aligned} \bullet \sqrt[n]{a} &= a^{1/n} & \bullet \sqrt[n]{a^m} &= a^{m/n} \end{aligned}$$

Ejemplos

$$\rightarrow \sqrt[5]{2^1} = 2^{1/5} \quad \rightarrow \sqrt[5]{2^3} = 2^{3/5}$$

Definición 3. Propiedades

$$\begin{aligned} \bullet (\sqrt[n]{a})^m &= (a^{1/n})^m = a^{m/n} = \sqrt[n]{a^m} \\ \rightarrow (\sqrt[4]{2})^3 &= (2^{1/4})^3 = 2^{3/4} = \sqrt[4]{2^3} \end{aligned}$$

$$\bullet \sqrt[n]{\sqrt[m]{a}} = (a^{1/m})^{1/n} = a^{1/(m \cdot n)} = \sqrt[n \cdot m]{a}$$

$$\rightarrow \sqrt[4]{\sqrt[3]{a}} = (a^{1/3})^{1/4} = a^{1/12} = \sqrt[12]{a}$$

$$\bullet \sqrt[n \cdot p]{a^{m \cdot p}} = a^{\frac{m \cdot p}{n \cdot p}} = a^{\frac{m}{n}} = \sqrt[n]{a^m}$$

$$\rightarrow \sqrt[12]{a^9} = a^{9/12} = a^{3/4} = \sqrt[4]{a^3}$$