

Chapter 7

$$\begin{aligned}4^4 &= 256 \\4^3 &= 64 \\4^2 &= 16 \\4^1 &= 4 \\4^0 &= 1\end{aligned}$$

$$4^4 = 256$$

$$4^3 = 64$$

$$4^2 = 16$$

$$4^1 = 4$$

$$4^0 = 1$$

$$\longrightarrow 4^{\frac{1}{2}} = 2$$

$$9^{\frac{1}{2}} = 3 \quad 25^{\frac{1}{2}} = 5$$

$$x^{\frac{1}{2}} = \sqrt{x}$$

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



$$27^{\frac{1}{3}} = \sqrt[3]{27} = 3$$

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

Rational Exponents:

$$A^{\frac{1}{n}} = \sqrt[n]{A}$$

$\sqrt{}$ this symbol is called a radical sign

$\sqrt[n]{A}$  n is called the index ("what root")
 A is called the radicand

How would you say each?

1. \sqrt{B} the square root of B

2. $\sqrt[3]{C}$ the cube root of C

3. $\sqrt[6]{D}$ the 6th root of D

4. $\sqrt[n]{E}$ the nth root of E

$$A^m = A^m \quad A^{\frac{1}{n}} = \sqrt[n]{A}$$

$$A^{\frac{m}{n}} = \sqrt[n]{A^m} \quad \text{or} \quad (\sqrt[n]{A})^m$$

Write in radical form:

a. $C^{\frac{3}{2}}$

$\sqrt{C^3}$ or $(\sqrt{C})^3$

b. $W^{\frac{1}{4}}$

$\sqrt[4]{W}$