

5/ Algebra 1 - Downing

Unit 9 Lesson 2: Radicals and Rational Exponents

* Simplify

$$\sqrt{48} = 2 \cdot 2 \sqrt{3} = 4\sqrt{3}$$

$$\sqrt[3]{48} = 2 \sqrt[3]{3 \cdot 2} = 2 \sqrt[3]{6}$$

$$\sqrt[4]{48} = \sqrt[4]{2^4 \cdot 3} = 2 \sqrt[4]{3}$$

$(2)^3 = 8$ > opposite operation
 $\sqrt[3]{8} = 2$

Find the indicated real n^{th} root of 'a'.

What if...

Ex) $n = 3, a = -27$

$$\sqrt[3]{-27} = \boxed{-3}$$

$\sqrt{-27}$
 ↑
 Not a real number

Ex) $n = 4, a = 16$


$$\sqrt[4]{16} = \boxed{2}$$


Ex) $n = 3, a = -125 = \sqrt[3]{-125} = \boxed{-5}$


Rational Exponents

$$a^{\frac{m}{n}} = (\sqrt[n]{a})^m$$

Evaluate:

$$\text{Ex) } 16^{\frac{3}{4}} = (\sqrt[4]{16})^3 = (2)^3 = \boxed{8}$$


$$\text{Ex) } 27^{\frac{4}{3}} = (\sqrt[3]{27})^4 = (3)^4 = \boxed{81}$$


$$\text{Ex) } (-64)^{\frac{2}{3}} = (\sqrt[3]{-64})^2 = (-2 \cdot -2)^2 = (4)^2 = 16$$


HW Worksheet