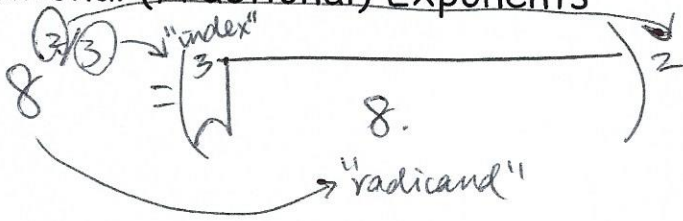


Mon. 2/4/19

IV. Rational (Fractional) Exponents



$$27^{4/3} = \left(\sqrt[3]{27} \right)^4 = \left(\sqrt[3]{27^4} \right)$$

$\sqrt[3]{8} = 2$ since ~~2~~ $2 \cdot 2 \cdot 2 = 8$.
 ↳ what number may be used (3) times resulting in (8).

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

calculator: $\boxed{8} \boxed{y^x} \boxed{(} \boxed{2} \boxed{\div} \boxed{3} \boxed{)} = 4$
 $\boxed{\wedge}$

$$\boxed{64} \boxed{y^x} \boxed{(} \boxed{2} \boxed{\div} \boxed{3} \boxed{)} = \left(\sqrt[3]{64} \right)^2 = 64^{2/3} = 16.$$

$$a^{b/c} = \sqrt[c]{a^b} \text{ or } \left(\sqrt[c]{a} \right)^b$$

$$\sqrt[a]{x^b} = x^{b/a}$$

$$\sqrt{7} = 7^{1/2}$$

* $7 = 7^1$ if there's no visible exponent, it is 1st power.
 $\sqrt{\quad}$ no index is the same as "square root" $\sqrt{\quad}$

• Quiz 3

• Never have a negative exponent as the final answer

• RATIONAL (FRACTIONAL) EXPONENTS

★challenging.

- exponents are fractions. e.g. $8^{2/3}$

- translate rational exponents into radical expression.

- definitions.

(1). radicand: the stuff under the radical

(2) index:

(3) a radical expression is asking you what number may be used [index] number of times results in [radicand].

- formulas

$$a^{b/c} = \left(\sqrt[c]{a} \right)^b = \sqrt[c]{a^b}$$

$$\sqrt[a]{x^b} = x^{b/a}$$

example: $\sqrt{7} = 7^{1/2}$ $\left\{ \begin{array}{l} 7^1 = 7 \\ \sqrt{7} = \sqrt[2]{7} \end{array} \right.$

• no visible exponent, then exponent is understood as 1.

no visible index on the radical expression, it's understood as 2.