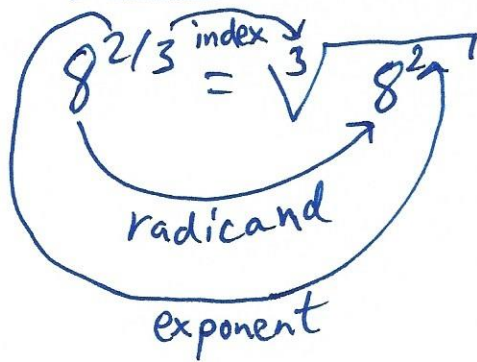


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Rational Exponents



$\sqrt[3]{8^1} \rightarrow$ what number may be used as a factor 3 times with the result of 8?

Since $2 \cdot 2 \cdot 2 = 8$, $\sqrt[3]{8^1} = 2$

$$32^{3/5} = \sqrt[5]{32^3}, \quad \sqrt[b]{a^c} = a^{c/b}$$

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

x	x ²	x ³	x ⁴	x ⁵
2	4	8	16	32
3	9	27	81	243
4	16	64	256	1024
5	25	125	625	3125

1. Change your chart # into its exponential equivalent
2. Apply 2nd property of exponents (power to a power)

$$\text{Ex: } 81^{-3/4} = (3^4)^{-3/4} = 3^{-1/3} = \frac{1}{3^3} = \frac{1}{27}$$

Notes for 9/12/18 continued:

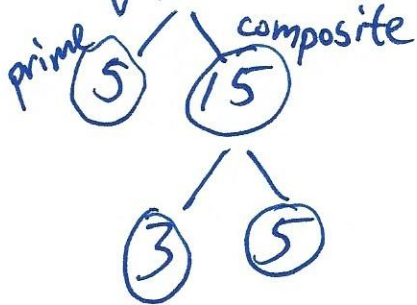
$$\left(\frac{8}{125}\right)^{-1/3} = \left(\frac{2^3}{5^3}\right)^{-1/3} = \frac{2^{-1}}{5^{-1}} = \frac{5}{2}$$

$$\left(\frac{1}{\sqrt{243}}\right)^{-2/5} = \left(\frac{1}{\sqrt{3^5}}\right)^{-2/5} = \left(\frac{1}{3^{5/2}}\right)^{-2/5} = \frac{1}{3^{-1}} = 3$$

Simplifying Radical Expressions

1. No radicand may contain a factor to a power greater than or equal to the index of the ~~radicand~~ radical.

Ex: $\sqrt{75}$



$$\sqrt{75} = \sqrt{3 \cdot 5 \cdot 5} = 5\sqrt{3}$$

$$\sqrt{98a^2b^3} = \sqrt{2 \cdot 7 \cdot 7 \cdot a \cdot a \cdot b \cdot b \cdot b}$$

(2) 49

(7) (7)

$$= 7ab\sqrt{2a}$$

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$$\sqrt[3]{24a^4b^5} = \sqrt[3]{\underbrace{3 \cdot 2 \cdot 2 \cdot 2} \cdot \underbrace{a \cdot a \cdot a \cdot a} \cdot \underbrace{b \cdot b \cdot b \cdot b \cdot b}}$$

$$\sqrt[3]{24a^4b^5} = 2ab\sqrt[3]{3ab^2}$$