Fractional Exponents

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$36^{\frac{1}{2}}$ exponent, index

$36^{\frac{1}{2}} = \left(\sqrt[2]{36}\right)^{1}$

$\left(\sqrt{36}\right)^{1} = \sqrt{36^{1}}$

Simplify

$$27^{-\frac{2}{3}}$$

$\frac{1}{27^{2/3}} = \frac{1}{(\sqrt[3]{27})^2} = \frac{1}{3^2} = \frac{1}{9}$

$\sqrt[4]{16} = 2$ $\sqrt[3]{8} = 2$

$\sqrt{64} = 8$ $\sqrt[3]{64} = 4$

$1^3 = 1$

$2^3 = 8$

$3^3 = 27$

$4^3 = 64$

$5^3 = 125$

$\sqrt[5]{32} = 2$

$\sqrt[4]{81} = 3$

$3 \cdot 3 \cdot 3 \cdot 3$

$\sqrt[4]{625} = 5$

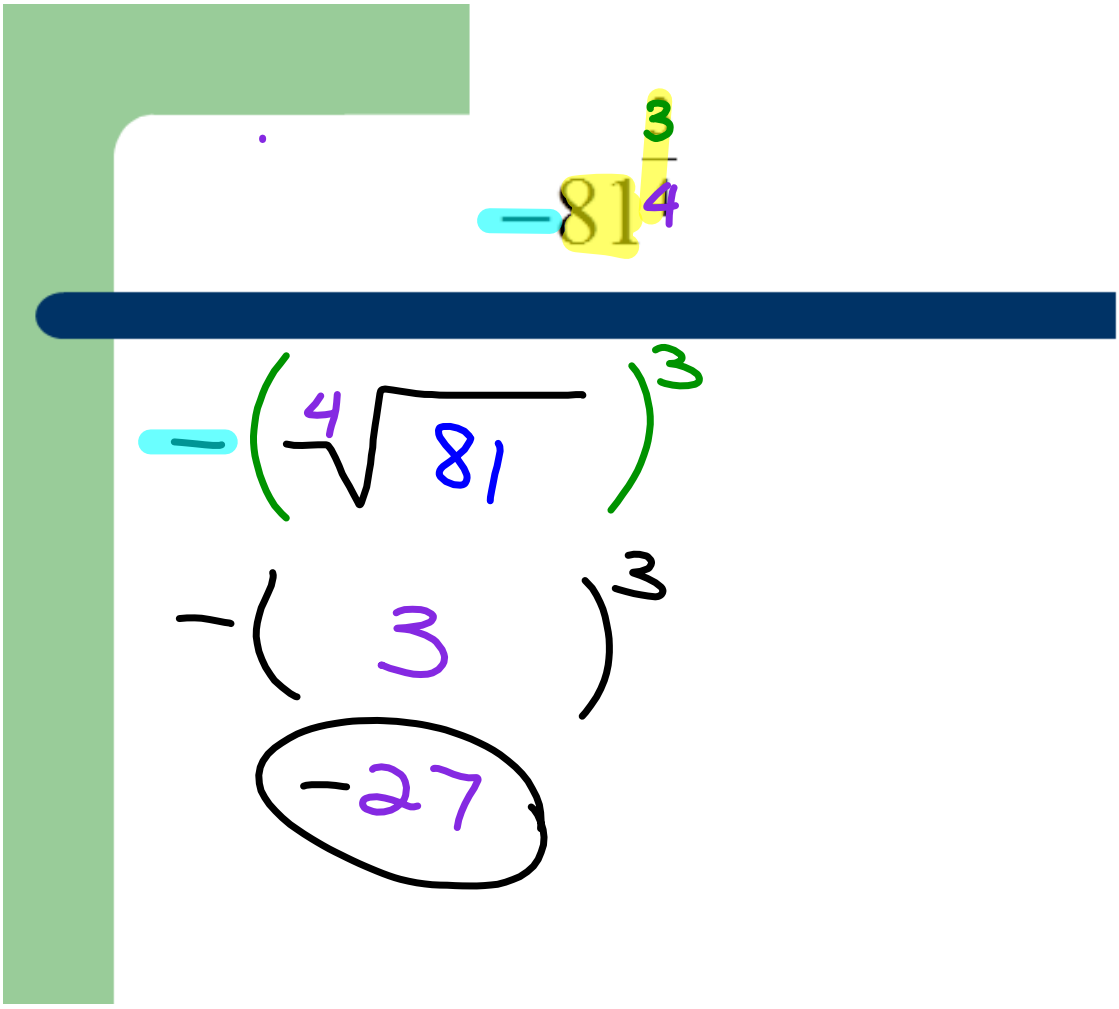
$\sqrt[2]{625} = 25$

$$16^{\frac{3}{2}}$$

$$\left(\sqrt{16}\right)^3 =$$

$$(4)^3$$

$$64$$


3
4
−81
−(4√81)3
−(3)3
−27

Simplify:

$$x^{\frac{3}{4}} * x^{\frac{2}{3}}$$

$x^{\left(\frac{3}{4}\right)+\left(\frac{2}{3}\right)}$

Exponential form: $x^{\frac{17}{12}}$

Radical form: $\left(\sqrt[12]{x}\right)^{17}$

$= \sqrt[12]{x^{17}}$

$$\frac{x^{\frac{1}{2}}}{x^{\frac{1}{4}}}$$

$x^{\frac{1}{2}-\frac{1}{4}} = x^{\frac{1}{4}}$

Simplify:

$$\left(x^{\frac{2}{3}}y^{3}\right)^{5}\left(3xy^{\frac{1}{3}}\right)$$

$$\left(x^{\frac{10}{3}}y^{15}\right)\left(3xy^{\frac{1}{3}}\right)$$

$$3x^{\frac{10}{3}+1}y^{15+\frac{1}{3}}$$

$$3x^{13/3}y^{46/3}$$

Simplifying Radicals

$\sqrt{64} = 8$

Simplify

$\sqrt{27}$

① look for the largest Perfect square that goes into 27

$\sqrt{9}\ \sqrt{3}$

$3\sqrt{3}$

$\sqrt{8}$

$\sqrt{4 \cdot 2}$

$2\sqrt{2}$

$\sqrt{32}$

$\sqrt{4 \cdot 8}$

$2\sqrt{8}$

$2\sqrt{4 \cdot 2}$

$4\sqrt{2}$

OR $\sqrt{16 \cdot 2}$

$4\sqrt{2}$