

Fractional (Rational) Exponent Notes:

Using your calculator, try the following exponent problems:

$$9^{\frac{1}{2}} \text{ (That's 9 to the } \frac{1}{2} \text{ power)}$$

$$49^{\frac{1}{2}}$$

$$81^{\frac{1}{2}}$$

What is happening?

Now try....

$$8^{\frac{1}{3}}$$

Remember:

$$x^{\frac{1}{2}} = \sqrt{x} \quad x^{\frac{1}{3}} = \sqrt[3]{x} \quad \text{So, } x^{\frac{1}{4}} = \underline{\hspace{2cm}}$$

Also,

$$x^{\frac{1}{5}} = \sqrt[5]{x}, \quad x^{\frac{2}{5}} = (\sqrt[5]{x})^2, \quad x^{\frac{3}{5}} = (\sqrt[5]{x})^3 \quad \text{So, } a^{\frac{5}{9}} = \underline{\hspace{2cm}}$$

What's the difference between:

$$3x^{\frac{2}{3}} \quad \text{and} \quad (3x)^{\frac{2}{3}}$$