

Name: _____

Date: _____

Learning Goal 4.3

Evaluate expressions with fractional and negative exponents. Connect fractional exponents to radicals, and negative exponents to reciprocals.

Recall:

1. $3^6 3^2 =$

2. $6^3 6^7 6^2 6^5 =$

3. $7^6 7^3 7 =$

Extend the idea to non-whole number exponents:

4. $2^{\frac{1}{2}} 2^{\frac{1}{2}} =$

5. $5^{0.25} 5^{0.25} 5^{0.25} 5^{0.25} =$

6. $11^{\frac{1}{3}} 11^{\frac{1}{3}} 11^{\frac{1}{3}} =$

Take a silent moment. What do you think the **fractional exponents** represent?

When n is a natural number and x is a rational number,

1. $1000^{\frac{1}{3}}$

2. $0.25^{\frac{1}{2}}$

3. $(-8)^{\frac{1}{3}}$

4. $(\frac{16}{81})^{\frac{1}{4}}$

What if the exponent is not a unit fraction? Take a silent minute to consider.

$$40^{\frac{2}{3}}$$

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When m and n are natural numbers, and x is a rational number,

Examples

1. $0.01^{\frac{3}{2}}$

2. $(-27)^{\frac{4}{3}}$

3. $81^{\frac{3}{4}}$

4. $0.75^{1.2}$