

Rational Exponents

Definition of $b^{\frac{1}{n}}$ -

Examples:

1. $36^{\frac{1}{2}}$

2. $64^{\frac{1}{3}}$

3. $49^{\frac{-1}{2}}$

4. $\frac{1}{8}^{\frac{-1}{3}}$

Application problem:

Economists refer to inflation as increases in the average cost of purchases. The formula $C = c(1 + r)^n$ can be used to predict the cost of consumer items at some projected time. In this formula, C represents the projected cost of the item at the given annual inflation rate, c the present cost of the item, r is the rate of inflation (in decimal form), and n is the number of years for the projection. Suppose a gallon of milk costs \$2.69 now. How much would the price increase in 6 months with an inflation rate of 5.3%?

Step 1: Identify the known values.

Step 2: Find the value for C

Definition of Rational Exponents –

** Three different ways to write a rational exponent**

Examples:

1. $36^{\frac{3}{2}}$

2. $27^{\frac{4}{3}}$

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

Simplifying Expressions

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Remember * Multiplying exponents, we actually add!!!*

Simplify each expression

3. $4^{\frac{1}{3}} a^{\frac{1}{2}} b^{\frac{5}{6}}$

4. $x^{\frac{1}{2}} x^{\frac{3}{4}} x^{\frac{1}{5}}$

5. $w^{\frac{-4}{5}}$

6. $xy^{\frac{-1}{8}}$

$$7. \frac{\sqrt[10]{32}}{\sqrt[8]{4}}$$

$$8. \frac{5^{-\frac{1}{2}}}{2\sqrt{5}}$$

$$9. \frac{1}{m^{\frac{1}{2}} - 1}$$

$$10. 6^{\frac{2}{5}} y^{\frac{8}{5}}$$

$$11. \frac{c^{\frac{2}{3}} - c}{c^{-\frac{1}{2}}}$$

$$12. \frac{2x^{-2}}{x^{\frac{-3}{2}}}^{-2}$$