

The Quotient Rule

8th Grade

Same base, dividing? Subtract the exponents.

When dividing powers with the same base, keep the base and subtract the bottom exponent from the top one.

$$a^m \div a^n = a^{m-n}$$

$$x^7 \div x^3$$

$$x^4$$

Seven x's on top, three cancel.

$$2^6 \div 2^2$$

$$2^4 = 16$$

$$6 - 2 = 4.$$

$$x^3 \div x^5$$

$$x^{-2} = 1/x^2$$

A negative exponent means it belongs on the bottom.

$$12x^5 \div 3x^2$$

$$4x^3$$

Divide the coefficients, subtract the exponents.

THE COMMON MISTAKE

✗ $x^7 \div x^3 = x^{7/3}$

✓ $x^7 \div x^3 = x^4$

Subtract the exponents. Dividing them is not a rule at all.

Top minus bottom. Getting the order backwards flips the sign of the answer's exponent.