

$$x^2 \cdot x^3$$

Exponent Rules

$$(x^2)^3$$

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

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

$$(x^2 y^3)^3$$

$$x^{-5}$$

$$x^0$$

Product of like bases:
Keep base, and
add exponents

$$X^2 \cdot X^3 = X^{2+3} = X^5$$

$$2x^1 \cdot 3x^1 = 6x^{1+1} = 6x^2$$

Properties of Exponents

Power to a Power:
Keep base and
multiply exponents

$$(X^2)^3 = X^{2 \cdot 3} = X^6$$

$$(3x)^3 = 3^3 x^3 = 27x^3$$

Quotient of like bases:
Keep base and
subtract exponents
* Negative exponents

$$\frac{X^3}{X^2} = X^{3-2} = X^1$$

$$\frac{10x^5}{2x^2} = 5x^3$$

Quotient to a Power:
Distribute the
Power to all terms.
Multiply exponents

$$\left(\frac{X^2}{3}\right)^3 = \frac{X^{2 \cdot 3}}{3^{1 \cdot 3}} = \frac{X^6}{3^3} = \frac{X^6}{27}$$

$$(X^2 Y^3)^3 = X^{2 \cdot 3} Y^{3 \cdot 3} = X^6 Y^9$$

$$(2XY)^2 = 2^{1 \cdot 2} X^{1 \cdot 2} Y^{1 \cdot 2} = 4X^2 Y^2$$

Product to a Power:
Distribute the
power to all terms.
multiply exponents

Negative Exponents:
move term with
negative exponent
to either numerator
or denominator to
make positive

$$X^{-5} = \frac{1}{X^5}$$

$$\frac{1}{X^{-3}} = X^3$$

$$X^0 = 1$$

$$(3xyz)^0 = 1$$

$$\left(\frac{1x}{5y}\right)^0 = 1$$

Zero Exponent:
Anything to
the zero power is
equal to 1!