The Power Rule

The power rule is generally used to differentiate expressions that are raised to any power. It's a shortcut to determine the derivative of a power function.

Formula:

$$\frac{d}{dx}(x^n) = n \bullet x^{n-1}$$

(Basically, take the exponent, multiply it by the coefficient, and decrease the exponent by 1.)

Note:
- n must be a number, not a variable
- x must be a variable, not a number

Examples:

1.) $y = x^2$
    $y' = 2x^1$

2.) $y = x^3 + 1$
    $y' = 3x^2 + 0$

3.) $f(x) = x^6 + 2x^5 - 7x^4 + 10$
    $f'(x) = 6x^5 + 10x^4 - 28x^3$

4.) $f(x) = \frac{1}{x}$
    $f(x) = x^{-1}$
    $f'(x) = -x^{-2}$