Rules of differentiation

The derivative of a constant is zero: $(c)' = 0$

The derivative of a straight line is constant: $(cx)' = c$

Sums are derived term by term: $\big(f(x) + g(x)\big)' = f' + g'$

Derivative of a product: $\big(f(x)g(x)\big)' = f'g + fg'$

Constants are factored out: $\big(cg(x)\big)' = cg'$

Powers: $\big(x^2\big)' = 2x,\ \big(x^n\big)' = nx^{n-1}$

Derivative of a quotient: $\left(\dfrac{f(x)}{g(x)}\right)' = \dfrac{f'g - fg'}{g^2}$

Chain rule: $\big(g(f(x))\big)' = g'(f(x))f'(x)$

Derivatives of logarithmic functions:

$\big(\ln x\big)' = 1/x$

$\big(\ln f(x)\big)' = f'/f$ from the chain rule