

Math 171 Summary Sheet

Product Rule:

$$\frac{d}{dx}[f(x)g(x)] = f'(x)g(x) + f(x)g'(x)$$

Quotient Rule:

$$\frac{d}{dx} \frac{f(x)}{g(x)} = \frac{f'(x)g(x) - f(x)g'(x)}{g(x)^2}$$

Chain Rule:

$$f \circ g = f'(g(x))g'(x)$$

L'Hospital's Rule:

If $\lim_{x \rightarrow +\infty} \frac{f(x)}{g(x)} = \frac{\infty}{\infty}$, you recursively take the derivative of both f and g till you find a valid limit.

Mean Value Theorem:

If f is continuous on interval $[a, b]$

-AND-

If f is differentiable on open interval (a, b) .

-THEN-

There is a number, C , in (a, b) such that:

$$f'(c) = \frac{f(b) - f(a)}{b - a}$$