

## Quiz 3

## Calculus 1

9/25/2019

1. [5 points possible] Prove the Sum Rule for Derivatives, that if  $f(x)$  and  $g(x)$  are differentiable functions then  $(f+g)'(x) = f'(x) + g'(x)$ .

$$(f+g)'(x)$$

$$\lim_{x \rightarrow a} \frac{(f+g)(x) - (f+g)(a)}{x-a}$$

$$\lim_{x \rightarrow a} \frac{f(x) + g(x) - (f(a) + g(a))}{x-a}$$

$$\lim_{x \rightarrow a} \frac{f(x) + g(x) - f(a) - g(a)}{x-a}$$

$$\lim_{x \rightarrow a} \frac{f(x) - f(a)}{x-a} + \lim_{x \rightarrow a} \frac{g(x) - g(a)}{x-a}$$

$$f'(x) + g'(x)$$

Excellent!