

# Properties of Limits

Math 195

July 7, 2009

What are some rules that we can apply to limits?

## 1 Chiastic rules

### 1.1 The limit of a sum is the sum of the limits.

$$\lim_{x \rightarrow a} (f(x) + g(x)) = \left( \lim_{x \rightarrow a} f(x) \right) + \left( \lim_{x \rightarrow a} g(x) \right)$$

### 1.2 The limit of a product is the product of the limits.

$$\lim_{x \rightarrow a} (f(x) \cdot g(x)) = \left( \lim_{x \rightarrow a} f(x) \right) \cdot \left( \lim_{x \rightarrow a} g(x) \right)$$

## 2 Composition of functions

If  $f$  is a continuous function, then

$$\lim_{x \rightarrow a} f(g(x)) = f \left( \lim_{x \rightarrow a} g(x) \right).$$

## 3 Squeeze theorem