LIMITS
1LS3 - Fall 2016/17

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Properties of limits:

1. The limit of the sum is the sum of the limits, or

$$\lim_{x\to a}[f(x)+g(x)] = \lim_{x\to a} f(x) + \lim_{x\to a} g(x) \tag{1}$$

2. The limit of the difference is the difference of the limits, or

$$\lim_{x\to a}[f(x)-g(x)] = \lim_{x\to a} f(x) - \lim_{x\to a} g(x) \tag{2}$$

3. The limit of the product of a constant, c, and a function is the product of the constant and the limit of the function, or

$$\lim_{x\to a}[cf(x)] = c\cdot \lim_{x\to a} f(x) \tag{3}$$

4. The limit of the product is the product of the limits, or

$$\lim_{x\to a}[f(x)g(x)] = \left[\lim_{x\to a} f(x)\right]\cdot\left[\lim_{x\to a} g(x)\right] \tag{4}$$

5. Suppose $\lim_{x\to a} g(x) \neq 0$. Then the limit of the quotient is the quotient of the limits, or

$$\lim_{x\to a}\left[\frac{f(x)}{g(x)}\right] = \frac{\left[\lim_{x\to a} f(x)\right]}{\left[\lim_{x\to a} g(x)\right]} \tag{5}$$