## 1 | Limit Laws

Here 'em:

**Limit Laws** Suppose that c is a constant and the limits

$$\lim_{x \to a} f(x)$$
 and  $\lim_{x \to a} g(x)$ 

exist. Then

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

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

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

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

5. 
$$\lim_{x \to a} \frac{f(x)}{g(x)} = \frac{\lim_{x \to a} f(x)}{\lim_{x \to a} g(x)} \quad \text{if } \lim_{x \to a} g(x) \neq 0$$

6. 
$$\lim_{x \to a} f(g(x)) = f\left(\lim_{x \to a} g(x)\right)$$

7. 
$$\lim_{x \to a} f(x)^n = \left(\lim_{x \to a} f(x)\right)^n$$

Figure 1: Screen Shot 2020-09-02 at 1.55.13 PM.png

## 1.1 | Trig Limits + Squeeze Theorem!

\*Very logical theorem — if two things "enveloping functions" approach the same value, and the function in the middle will approach the same value\*

#disorganized

- · Dampening oscellation
- Could be modeled with  $\frac{\sin x}{x}$

**3** The Squeeze Theorem If  $f(x) \le g(x) \le h(x)$  when x is near a (except possibly at a) and  $\lim_{x \to a} f(x) = \lim_{x \to a} h(x) = I$ 

$$\lim_{x \to a} f(x) = \lim_{x \to a} h(x) = L$$

then

$$\lim_{x \to a} g(x) = L$$

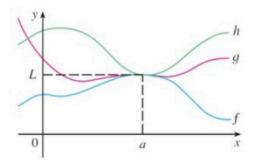


Figure 2: Screen Shot 2020-09-11 at 1.20.05 PM.png