MAT137 - Calculus with proofs

- Test 2 opens on FRIDAY, December 4
- Assignment #5 due on December 20

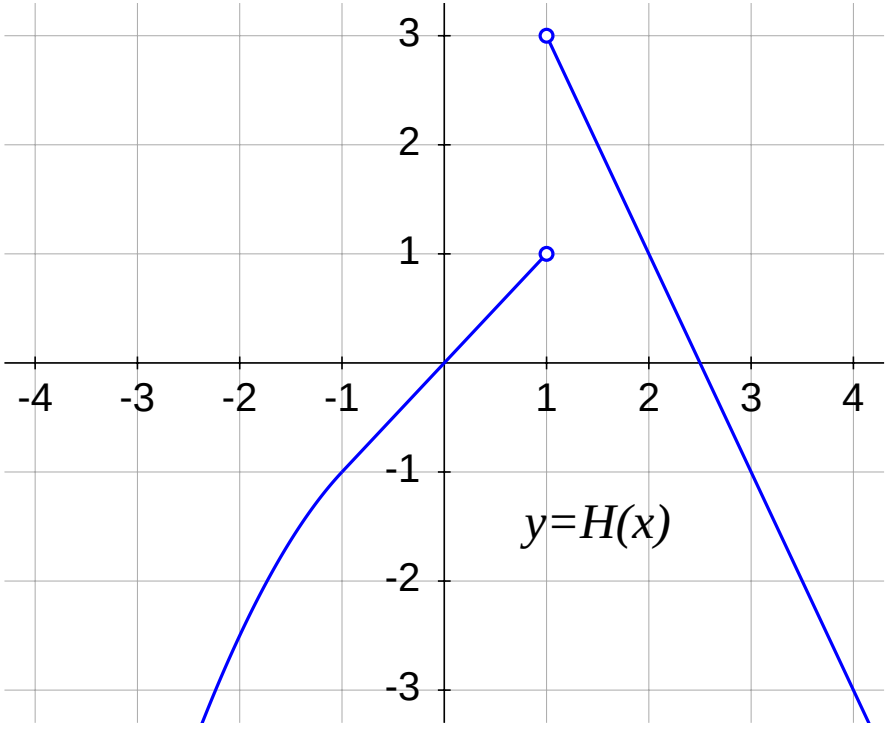
- TODAY: Indeterminate forms and L'Hôpital's Rule

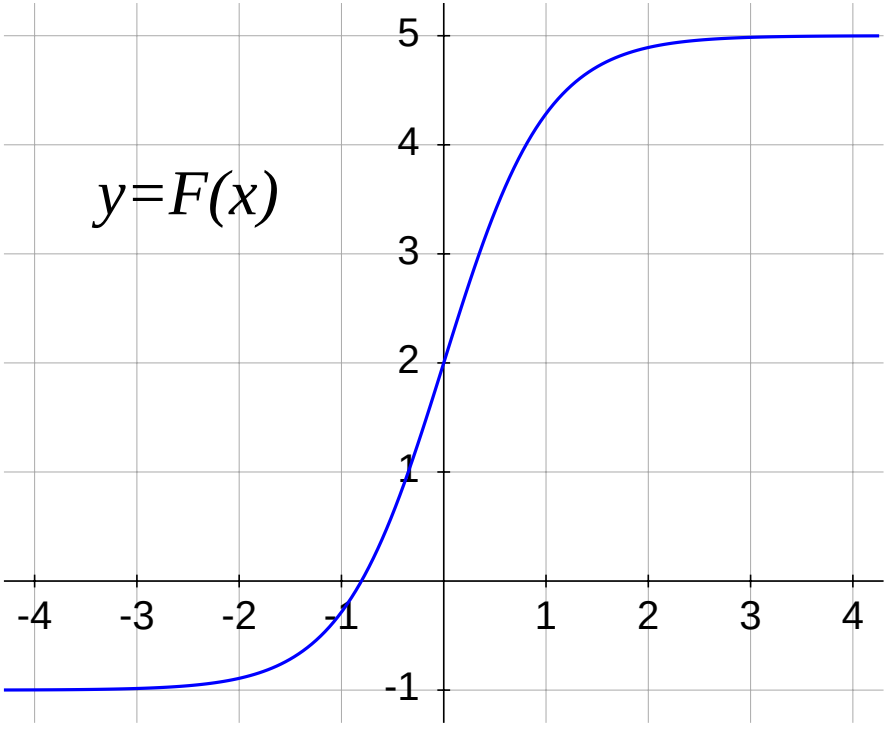
- NEXT: More indeterminate forms
  - **Watch videos: 6.10, 6.12**
  - Supplementary videos: 6.11

Limits from graphs

1. $\lim_{x \to 0} \dfrac{H(x)}{H(2+3x)-1}$

2. $\lim_{x \to 2} \dfrac{F^{-1}(x)}{x-2}$





Polynomial vs Exponential

1. Use L'Hôpital Rule to compute

$$\lim_{x \to \infty} \frac{x^7 + 5x^3 + 2}{e^x}$$

2. Generalize this. Come up with a theorem.

Computations

1. $\lim_{x \to 2} \dfrac{x^2 + 2x - 6}{x^2 + 3x - 10}$
2. $\lim_{x \to 0} \dfrac{e^{2x^2} - \cos x}{x \sin x}$
3. $\lim_{x \to \infty} x^3 e^{-x}$
4. $\lim_{x \to \infty} \dfrac{e^x + e^{-x}}{e^x - e^{-x}}$
5. $\lim_{x \to 0} x \sin \dfrac{2}{x}$
6. $\lim_{x \to \infty} x \sin \dfrac{2}{x}$
7. $\lim_{x \to \infty} x \cos \dfrac{2}{x}$
8. $\lim_{x \to 1} \left[(\ln x) \tan \dfrac{\pi x}{2} \right]$