Math 152-37, Mr. Church, Homework 1
Due in class on Friday, October 3
Odd-numbered problems from the book do not need to be turned in.

For the next two questions, sketch a graph of the function, use the graph to guess what the limit is. You do **not** need to give a proof that your guess is correct.

1. Let $f(x) = \frac{x+1}{x+2}$. What is $\lim_{x \to 3} f(x)$?

2. Let $f(x) = \begin{cases} x^2, & x < 3 \\ 7, & x = 3 \\ 2x + 3, & x > 3 \end{cases}$. What is $\lim_{x \to 3} f(x)$?

3. Exercise 2.2.21.

4. Exercise 2.2.24. Find the largest δ that "works" for the given ϵ: $\lim_{x \to 4} 5x = 20$; $\epsilon = 0.5$.

Give an ϵ-δ proof for the following statements.

5. Exercise 2.2.36. $\lim_{x \to 2} (3x - 1) = 5$.

6. Exercise 2.2.50. $\lim_{x \to 2} x^2 = 4$.