The big idea for this homework is limit. If you want to read about it, see Section 2.2 of your textbook.

1. Learn the meaning of and notation for limit of a function at a point.

2. The notation is \( \lim_{x \to a} f(x) \). Know what the various symbols mean:
   - \( f(x) \) is a function.
   - \( x \) is a variable.
   - \( a \) is a specific input value.

3. Limits are a deep and subtle topic. A complete understanding is not necessary for Calculus I. It is enough to know this:
   \[
   \lim_{x \to a} f(x) \text{ means you would really like to compute } f(a), \text{ but for some reason you are having trouble feeding the input } a \text{ through the function } f.
   \]

4. Be able to evaluate \( \lim_{x \to a} f(x) \) using three different techniques:

5. Learn Technique I: Plug \( a \) into \( f \).
   - If it works, you’re done.
   - If you get \( \frac{\text{non-zero}}{0} \), you found an asymptote. Your answer can only be \( \infty, -\infty \), or DNE.
   - If you get \( \frac{0}{0} \), the problem is still unsolved. You have to try a different technique.

   - Plug in inputs really close to \( a \). (Use some on each side of \( a \).)
   - Chart the resulting outputs.
   - Estimate the limit based on the values in your chart.

7. Learn Technique III: Estimate by looking at a graph.
   NOTE: If you have to make your own graph then this is just the same as Technique II.