

Math 1231 Fall 2020  
Single-Variable Calculus I Mastery Quiz 1  
Due Noon on Tuesday, September 8

This week's mastery quiz has one topic. Please do your best on that topic. Don't worry if you make a minor error, but try to demonstrate your mastery of the underlying material. You shouldn't spend more than 10-20 minutes on this quiz.

Feel free to consult your notes, but please don't talk about the actual quiz questions with other students in the course.

Remember that you are trying to demonstrate that you understand the concepts involved. For all these problems, justify your answers and explain how you reached them. Do not just write "yes" or "no" or give a single number.

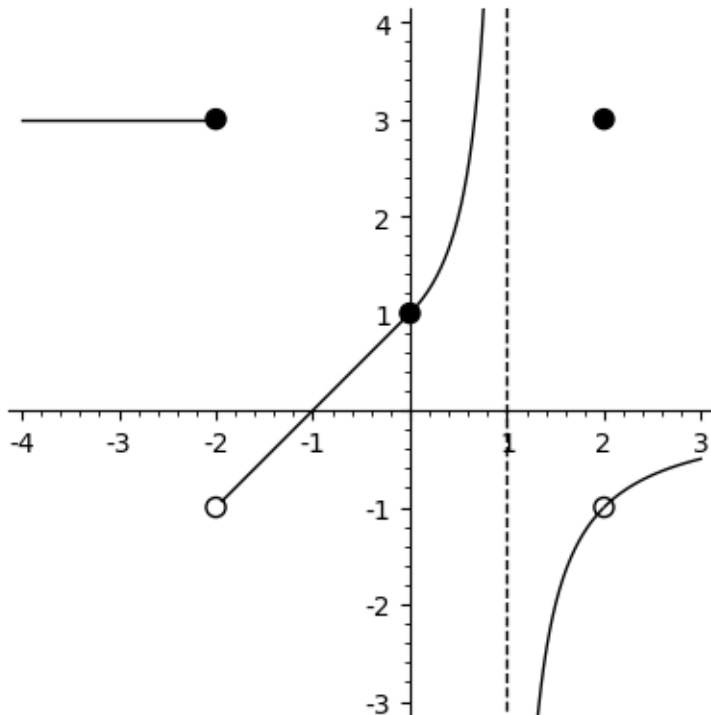
Please upload your work as *one PDF file*. You can produce the file on your computer/tablet/whatever, or you can handwrite it and then scan it. If you have a smartphone, there are many apps that can help you produce a clean single pdf; I personally have used GeniusScan but there are many options.

## 1. Topic 1: Informal Continuity and Limits

- (a) Give an approximate value for  $\sqrt{17}$ , and explain how you got it.

**Solution:** We know that 17 is close to 16, so we expect  $\sqrt{17}$  to be close to  $\sqrt{16} = 4$ .

Here is the graph of a function  $f$ :



- (b) What is the domain of  $f$ ?

**Solution:** All reals except 1. I'd also except all of  $[-4, 3]$  except 1.

- (c) Where (if anywhere) is  $f$  discontinuous?

**Solution:**  $x = -2, 1, 2$ .

- (d) What is  $\lim_{x \rightarrow 2} f(x)$ ?

**Solution:**  $-1$

- (e) What is  $f(2)$ ?

**Solution:**  $3$

- (f) What is  $\lim_{x \rightarrow -2} f(x)$ ?

**Solution:** Does Not Exist

- (g) What is  $f(-2)$ ?

**Solution:**  $3$