# Section 7.8: Improper Integrals
## MATH 131: Calculus II, Section 2

Name (Print): _____

Due: Wednesday, October 31, 2018 at the beginning of class

After reading Section 7.8 (pages 570-578 in the text), respond to the following questions **on this handout**. Be sure to staple your pages together before turning it in if they are not double sided. **You must answer all parts to all questions to earn full credit!!! Also, use FULL SENTENCES to answer questions that require words.** See the salmon homework guidelines handout for details.

**Response Section**

1. (a) What is the first type of improper integral discussed in this section?

    (b) State the definition of the first type of improper integral. Include diagrams.

2. On page 572 we look at the integral $\int_{-\infty}^{\infty} \frac{1}{1+x^2}\,dx$. Note that $\frac{1}{1+x^2}$ is always positive (see Figure 7.20), so the integral of this function should represent area under the curve. The interval is infinite, which means the region we are considering is really an infinite region! But when the integral is evaluated we find that it has a value of $\pi$. How can it be infinite but equal to $\pi$ at the same time? Doesn't this seem like a hoax? Explain!

3. (a) What is the second type of improper integral discussed in this section?

   (b) State the definition of the second type of improper integral. Include diagrams. (Note that it has three parts!)

**Questions/Overview Section**

4. Write down any **questions** you have on the reading. Be as specific as possible! See the salmon homework guidelines handout for details.

**Reflection Section**

5. Write **two or three** sentences reflecting on the process of your work so far in the course. See the salmon homework guidelines handout for details.

**Time Section**

6. How much time did you spend on this reading assignment? _____