Thursday, October 11

Follow the separate general guidelines for Parts A,B,C. Be sure to include and label *all four* standard parts (a), (b), (c), (d) of Part A in what you hand in.

Monotone real functions
Section 3.2.3

A: Reading questions. Due by 3pm, Wed., 17 Oct.

1. Give your own examples of a function that is strictly increasing on the interval $(0, 1)$, and of a function that is strictly decreasing on the interval $(0, 1)$.

2. Give an example of a function that is **neither** strictly increasing **nor** strictly decreasing on the interval $(0, 1)$.

3. What is the significance of a function being strictly monotone on a subset S of its domain?

4. How can you use calculus to show a function is strictly increasing, or to show it is strictly decreasing?

5. On p. 103, the text claims "...although we know that the factorial sequence s with $s(n) = n!$ is monotone, we could not use Theorem 3.7 to prove that." Explain both these claims: Verify (carefully) $s(n)$ is monotone; and explain why we cannot use Theorem 3.7 to prove that.

B: Warmup exercises. For you to present in class. Due by end of class Thu., 18 Oct.

　　3.2.3 Problems: 1, 2, 3, 4, 11

Limit behavior of real functions
Section 3.2.4

A: Reading questions. Due by 3pm, Mon., 22 Oct.

1. Sketch the graph of a function f such that f diverges to ∞ as x approaches c from the left for some value c. (You get to pick c. Just say what value of c you are using.)

2. Find a function f with 3 different vertical asymptotes. Explain how you know where the vertical asymptotes are. Sketch the graph of f (you can use graphing software for this), and point out the vertical asymptotes.

3. What does "end behavior" have to do with asymptotes?

4. What result is Question 3 illustrating?

5. Give an example of two functions that have the same order of growth. Then give an example of two functions f and g such that f has a higher order of growth than g. Don't use examples from the textbook. Explain why your answers are correct.

B: Warmup exercises. For you to present in class. Due by the end of class Tue., 23 Oct.

　　3.2.4 Problems: 1, 4, 6, 7, 12