# MATH 151 Homework 3

Due 1/30

Read Section 2.1 and pages 58-61 (you may ignore mathematical induction)

Do Section 1.3 Exercise 56
Do page 63 Exercise 9
Do Section 2.1 Exercises 2, 3 (Note: you will want to use a calculator or spreadsheet program to do the arithmetic on these problems.)

Also, do the following exercises

**SF6.** Brad can't sleep so he decides to check out some values of the function $f(x) = \sin(x)$ using a spreadsheet program. He comes up with the following table of values.

| $x$ | $\sin(x)$ |
|---|---|
| 1 | 0.841470984807897 |
| 0.1 | 0.0998334166468282 |
| 0.01 | 0.00999983333416666 |
| 0.001 | 0.000999999833333342 |
| 0.0001 | 0.0000999999998333333 |

He notices that for small values of $x$, $x$ and $\sin(x)$ are nearly the same value.

(a) Using complete sentences and the definition of the function $\sin(x)$, explain why Brad sees this relationship.

(b) Describe the relationship between $x$ and $\sin(x)$ that Brad would have found if he had been measuring angles in degrees instead of radians.

**SF7.** The average daily high temperature in St. Mary's County runs from a low of 44 in the month of January to a high of 86 in the month of July. If $f(x)$ is the average high temperature in St. Mary's County $x$ months after September 2010, create a formula for $f(x)$.