Math 421   **Problem Set 1**   **Fall 2010**

Due: Monday 20 Sep. at start of class
except #1 due in *WeBWorK* Sunday 19 Sep. 5:00 p.m.

Although no *Mathematica* is involved in this assignment, you may want to check your work there. Please do *not* just use *Mathematica* to calculate answers; you need to be able to do these with paper and pencil, too!

Please follow scrupulously the **homework format instructions** from the course syllabus. (See "Homework sets" there.)

1. This question consists of set 421HW1 in *WeBWorK*. The answers to the questions there are due Sunday 19 Sep. 5:00 p.m.

2. (a) Do page 6, Exercise 5 (b).

   (b) Do page 6, Exercise 6 (a).

3. Use the *definition* of complex numbers as ordered pairs and the *definitions* of addition and multiplication in $\mathbb{C}$ in terms of ordered pairs to establish the distributive law (for multiplication over addition).

4. Do page 15, Exercise 6 (a) and (d).

5. Prove identity (1–26) from page 19. For full credit, do this *without* using the $x + i\,y$ form for complex numbers!