Homework #1

(a) Look over the review problems for Chapter 1. You need not do all, but make sure you understand *how* to do all of them.

(b) Routine problems (but don't hand in): §**1.8.** # 11, 13, 15. §**11.1.** # 11, 12, 21.

To hand in:

(1) Prove $\sqrt{3}$ is irrational.

(2) Prove that for each $n = 1, 2, \ldots$, $4^n + 5$ is divisible by 3.

(3) Find a simplifying expression for the product

$$\left(1 - \frac{1}{2^2}\right)\left(1 - \frac{1}{3^2}\right)\cdots\left(1 - \frac{1}{n^2}\right)$$

Then use Mathematical Induction to prove that your formula is correct.