

### Math 215. Homework 3

due 02/4/08

Problems from the textbook p. 54 and 55.

7, 9, 12, 14, 15, 16

1. Show that sum of two non-decreasing functions is non-decreasing.

2. Show that there is an integer  $N$  such that all numbers  $N, N + 1, \dots, N + 10^7$  are composite.

3. Show that for  $n = 2^m$  and  $a_i \geq 0$  one has:

$$\frac{a_1 + \dots + a_n}{n} \geq (a_1 \cdot \dots \cdot a_n)^{\frac{1}{n}}$$