**MthT 430 Problem Set 02**

In class September 5, 2007 – Turn in September 12, 2007

**Group Work Rules:**

- You are encouraged to work together!
- Away from the group, do your own neat write up of the problems.
- Acknowledge the group members and any other person/source you use.

This assignment should be typed or written very neatly.

In writing a proof using mathematical induction (PMI), write a careful statement of $P(k)$.

1. Prove by PMI or otherwise:

$$1^3 + 2^3 + \ldots + n^3 = (1 + 2 + \ldots + n)^2 .$$

This also proves a formula stated in Spivak Problem 2.7.

See also

`http://www.math.com/tables/expansion/power.htm`

2. (Spivak Problem 2.19) Prove the inequality (Bernoulli): If $h > -1$, then

$$(1 + h)^n \geq 1 + nh.$$