

DISCUSSION FOR THIRD TUTORIAL

DATE: OCTOBER 24 OR 31, 2011 : DUE IN TUTORIAL NOVEMBER 7 OR 14, 2011

The following problem is called **Square Bashing** from Thinking Mathematically Second Edition p. 175.

Take any numbers satisfying a pattern of the form

$$4^2 + 5^2 + 6^2 = 2^2 + 3^2 + 8^2 .$$

Pair up the left and right numbers in any way at all, for example 42, 53, 68. Notice then that

$$42^2 + 53^2 + 68^2 = 24^2 + 35^2 + 86^2$$

Why? Explain if such a manipulation will work for other types of pairings, when it will work and why.

Examples:

$$1^2 + 4^2 + 6^2 + 7^2 = 2^2 + 3^2 + 5^2 + 8^2$$

$$1 + 4 + 6 + 7 = 2 + 3 + 5 + 8$$

$$3^3 + 4^3 + 5^3 = 0^3 + 0^3 + 6^3$$