Project Based Math 112, Fall 2001 Sigma Detectives Revisited

Weeks ago you guessed the formula

$$\sum_{i=1}^{n} i^{3} = \left[\frac{n(n+1)}{2}\right]^{2}.$$

Now it's time to prove it using mathematical induction. To prove a formula by mathematical induction we need to show two things:

Base Case: The formula is true when n = 1. Inductive Case: If the formula happens to be true for n, then it must also be true for n + 1.

(a) Write out and prove the base case.

(b) Write out and prove the inductive case.

CONGRATULATIONS! You have done a proof by mathematical induction.