UW Math Circle

April 14, 2016

Homework

1. Show that $1^2 + 2^2 + \cdots + n^2 = n(n+1)(2n+1)/6$

2. Prove that for any positive integer n, $1^3 + 2^3 + \cdots + n^3 = (1 + 2 + \cdots + n)^2$.

3. Find a formula for the total number of dots in a hexagonal arrangement of n rings of dots. Prove your formula is correct! The cases $n = 1, 2, 3, 4$ are drawn below: