

# Chapter 4, Summations and Products

# Induction

- Induction is a proof technique used to verify a property of a sequence
  - $2, 4, 6, 8, \dots$  for  $i \geq 1$   $a_i = 2i$ 
    - an infinite sequence with infinite distinct values
  - for  $i \geq 1$   $b_i = (-1)^i$ 
    - an infinite sequence with finite distinct values
  - for  $1 \leq i \leq 6$   $c_i = i + 5$ 
    - a finite sequence (with finite distinct values)

## Finding an explicit formula

- Figure out the formula for this sequence:

$$1, -\frac{1}{4}, \frac{1}{9}, -\frac{1}{16}, \frac{1}{25}, \dots$$