

Appendix B Exercises:

5.

The ancient Greeks were very interested in sequences resulting from geometric shapes such as the following triangular numbers:

$$\begin{array}{c} \text{Row } 1: \quad \text{O} \\ \text{Row } 2: \quad \text{O} \quad \text{O} \quad \text{O} \quad \rightarrow (1, 3, 6, \dots) \\ \text{Row } 3: \quad \text{O} \quad \text{O} \quad \text{O} \quad \text{O} \quad \text{O} \quad \dots \end{array}$$

Write a recurrence equation for the n th term in this sequence, guess a solution, and use induction to verify your solution.

6.

Into how many regions do n lines divide a plane so that every pair of lines intersect, but no more than two lines intersect at a common point? Write a recurrence equation for the number of regions for n lines, guess a solution for your equation, and use induction to verify your solution.