

**Section 6.1**

- 6.6b** Use mathematical induction to prove that  $1^3 + 2^3 + 3^3 + \dots + n^3 = \frac{n^2(n+1)^2}{4}$  for every positive integer  $n$ .
- 6.14** Prove that  $2! \cdot 4! \cdot 6! \dots (2n)! \geq [(n+1)!]^n$  for every positive integer  $n$ .
- 6.16** Prove that  $7 \mid (3^{4n+1} - 5^{2n-1})$  for every positive integer  $n$ .
- 6.48** Prove that  $1 \cdot 2 + 2 \cdot 3 + 3 \cdot 4 + \dots + n(n+1) = \frac{n(n+1)(n+2)}{3}$  for every positive integer  $n$ .