

**Instructions**

- Answer each question completely; justify your answers.
  - This assignment is due at 2:00 pm on Tuesday, November 19, 2002.
1. Exercise 7.1.12.
  2. Exercise 7.1.16a.
  3. Exercise 7.1.22.
  4. Exercise 7.1.30.
  5. Let  $a_n = \binom{n}{k}$  where  $k$  is a fixed constant. Find  $\Delta a_n$ .
  6. Exercise 7.2.4.
  7. Exercise 7.3.2.
  8. Exercise 7.3.6.
  9. Solve the following recurrence relations:
    - (a)  $a_n = 5a_{n-1} - 6a_{n-2} - 4a_{n-3} + 8a_{n-4}$ ,  $a_0 = 7, a_1 = 18, a_2 = 152, a_3 = 644$ .
    - (b)  $a_n = a_{n-1} - 3a_{n-2} + 3a_{n-3}$ ,  $a_0 = 2, a_1 = 3, a_2 = 8$ .
  10. Exercise 7.4.10.