PMAT 4340 – Combinatorial Analysis — Assignment #7
Fall 2003

Instructions

- Answer each question completely; justify your answers.
- This assignment is due at: 3:00 pm on Wednesday November 12th.

1. Exercise 7.1.34.
2. Exercise 7.2.2.
3. Assuming that n is a power of 2, solve the following recurrence relations:
   (a) $a_n = a_{\frac{n}{2}} + 7$, $a_1 = 5$.
   (b) $a_n = 4a_{\frac{n}{2}} - 5n$, $a_1 = 2$.
   (c) $a_n = -3a_{\frac{n}{2}} + 2n$, $a_1 = 1$.
4. Solve the following linear recurrence relations:
   (a) $a_n = -2a_{n-1} + 5a_{n-2} + 6a_{n-3}$, $a_0 = 5, a_1 = 5, a_2 = 55$.
   (b) $a_n = -2a_{n-1} + 2a_{n-3} + a_{n-4}$, $a_0 = 5, a_1 = -1, a_2 = -14, a_3 = 33$.
5. Solve the following inhomogeneous recurrence relations:
   (a) $a_n = 2a_{n-1} + n$, $a_0 = 17$.
   (b) $a_n = 4a_{n-1} - 3^n$, $a_0 = 1$.
   (c) $a_n = 3a_{n-1} - 2n + n^2$, $a_0 = 0$.