MATH 4340 – Combinatorial Analysis — Assignment #7
Fall 2013

Instructions

- Answer each question completely; justify your answers.
- This assignment is due at 15:00 on Friday November 22nd in Assignment Box #34.

1. Exercise 7.1.6.
2. Exercise 7.1.20.
3. Exercise 7.1.22.
4. Exercise 7.1.24.
5. Exercise 7.1.34.
6. Exercise 7.2.2.
7. 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) $a_n = 3a_{\frac{n}{2}} + 2n$, $a_1 = 1$.
8. 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) $a_n = -2a_{n-1} + 2a_{n-3} + a_{n-4}$, $a_0 = 5, a_1 = -1, a_2 = -14, a_3 = 33$.
9. Solve the following linear recurrence relation: $a_n = -7a_{n-1} - 9a_{n-2}$, $a_0 = 0, a_1 = 1$.