

**Instructions**

- Answer each question completely; justify your answers.
  - This assignment is due at: 5:00 pm on Wednesday November 15th.
1. Exercise 7.1.10.
  2. Exercise 7.1.20.
  3. Exercise 7.1.34.
  4. Exercise 7.2.2.
  5. 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)  $a_n = -3a_{\frac{n}{2}} + 2n, a_1 = 1.$
  6. 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)  $a_n = -2a_{n-1} + 2a_{n-3} + a_{n-4}, a_0 = 5, a_1 = -1, a_2 = -14, a_3 = 33.$