Math 2300 – Spring 2011
Homework 19

Solve the following recurrence relations:
For 1-3 use the theorem on the handout, for 4 and 5 use generating functions.

1. $a_k = 4a_{k-1} - 9, \quad k \geq 1, \quad a_0 = 1$

2. $a_k = 4a_{k-1} - 4a_{k-2} + k, \quad k \geq 2, \quad a_0 = 5, a_1 = 9$

3. $a_k = 2a_{k-1} + 3a_{k-2} + 5^k, \quad k \geq 2, \quad a_0 = -2, a_1 = 1$

4. $a_k = 2a_{k-1}, \quad k \geq 1, \quad a_0 = 1$

5. $a_k = 2a_{k-1} + 1, \quad k \geq 1, \quad a_0 = 1$