Math 2300 – Spring 2008
Homework 15
Due Monday April 28, 2008

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

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

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

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

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

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