Math 4363 - Combinatorics
Homework 6
Due in Class - Tuesday 30 April 2019

1. Determine the generating function for the sequence of cubes $0, 1, 8, 27, \cdots$.

2. Solve the recurrence relation

$$h(n) = h(n-1) + 9h(n-2) - 9h(n-3)$$

with initial values $h(0) = 0, h(1) = 1, h(2) = 2$.

3. Solve the recurrence relation

$$h(n) = 8h(n-1) - 16h(n-2)$$

with initial values $h(0) = -1, h(1) = 0$.

4. Solve the recurrence relation

$$h(n) = 3h(n-2) - 2h(n-3)$$

with initial values $h(0) = 1, h(1) = 0, h(2) = 0$.

5. Solve the recurrence relation $h(n)$ from question 3 by using the method of generating functions.