

Instructions

- Answer each question completely; justify your answers.
 - This assignment is due at: 5:00 pm on Wednesday November 22nd.
1. Solve the following linear recurrence relation: $a_n = -7a_{n-1} - 9a_{n-2}$, $a_0 = 0$, $a_1 = 1$.
 2. Solve the following inhomogeneous recurrence relations:
 - (a) $a_n = 2a_{n-1} + n$, $a_0 = 17$.
 - (b) $a_n = 4a_{n-1} - 3^n$, $a_0 = 1$.
 - (c) $a_n = 3a_{n-1} - 2n + n^2$, $a_0 = 0$.
 3. Use generating functions to solve the following recurrence relations:
 - (a) $a_n = a_{n-1} - 3n$, $a_0 = 3$.
 - (b) $a_n = 3a_{n-1} + 4a_{n-2}$, $a_0 = 1$, $a_1 = 2$.
 - (c) $a_n = 3a_{n-1} + 2^n$, $a_0 = 1$.
 - (d) $a_n = 3a_{n-1} - 2a_{n-2} + n$, $a_0 = 2$, $a_1 = 4$.
 4. Exercise 7.5.14.