

1. Solve the following recurrence equations.

(a) $a_{n+2} - 4a_{n+1} + 4a_n = 0$, $a_0 = 1, a_1 = 4$

(b) $a_{n+2} - 5a_{n+1} + 6a_n = 2$, $a_0 = 1, a_1 = 2$

(c) $a_{n+1} - 2a_n = n$, $a_0 = 1$

(d) $a_{n+2} = -a_{n+1} - a_n$, $a_0 = a_1 = 1$

2. Determine

$$\sum_{n=0}^{\infty} \frac{n^2 + 4n + 5}{n!}.$$