

MACM 201 Homework 5 (Quiz Oct. 17)

Textbook problems:

Section	Question
10.3	6
10.3	8
10.3	10

Instructor question(s):

1. For each equation below, express the number of solutions as a coefficient.

(a) $b_1 + b_2 + b_3 = 12$ where $0 \leq b_i \leq 6$ holds for $i = 1, 2, 3$

(b) $b_1 + b_2 + b_3 = 14$ where $b_1, b_2, b_3 \geq 0$ and b_1, b_2 are odd while b_3 is even.

(c) $b_1 + b_2 + b_3 + b_4 = 17$ where $2 \leq b_1 \leq 5$, b_2 is even, $b_3 \geq 0$ is odd, and b_4 is a multiple of 3.

2. Find a particular solution to each nonhomogeneous recursive equation

(a) $a_n - 5a_{n-1} - 6a_{n-2} = 2^n$ (for $n \geq 2$)

(b) $a_n - a_{n-1} - 6a_{n-2} = 5 \cdot 3^n$ (for $n \geq 2$)

(c) $a_n - a_{n-1} - 6a_{n-2} = n$ (for $n \geq 2$)

3. Find the general solution to each nonhomogeneous recursive equation

(a) $a_n - a_{n-1} - 6a_{n-2} = 5 \cdot 3^n$ (for $n \geq 2$)

(b) $a_n - 3a_{n-1} + 2a_{n-2} = n$ (for $n \geq 2$)

4. Find the unique solution to the recurrence

$$a_0 = 7 \quad a_1 = 5$$

$$a_n - a_{n-1} - 6a_{n-2} = 7 \cdot 3^n \quad (\text{for } n \geq 2)$$