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## Math 4363 - Combinatorics Homework 8

Due - Sunday 26 April 2020 11:59pm

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1. Let  $h_n$  denote the number of ways to color the squares of 1-by- $n$  board with colors red, white, blue and yellow so that the number of red squares is even and the number of white squares is odd. Determine the exponential generating function for  $h_n$  and hence find a simple formula for  $h_n$ .
2. Solve the recurrence relation

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

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