

Worksheet 8.2,4

Max's Lecture
MATH 55

July 25, 2019

Exercise A (example in book). Verify that $H_n = -1$ is a solution to the recurrence $H_n = 2H_{n-1} + 1$. Use this particular solution to find all solutions for the recurrence. Then, use the initial value $H_1 = 1$ to find a closed form solution to the towers of Hanoi problem.

Exercise B. You are making waffles, and are topping them with scoops of whipped cream, spoonfuls of sprinkles, and gummy worms. A proper waffle must satisfy the following:

- have at least 3 scoops of whipped cream
- have at most 1 spoonful of sprinkles
- have an even number of gummy worms

How many different kinds of proper waffles can I make with n total toppings?

Exercise C. Give an expression for the generating function of the number of ways to distribute n identical toys to 3 children such that each child gets at least 2 toys.