Isilda Aiello
I worked with Sophia Carlone, Ryan O'Rourke, and Trevor Savage

[Problem 1]
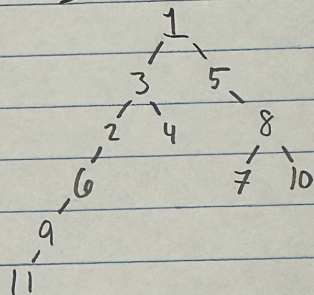A. $(n-1)!$ B. $(n-1)!$ C. Yes   D. $(n-1)!$ E. n^n
F. Yes   G. n^n H. n^{2n} I. Yes

[Problem 2]
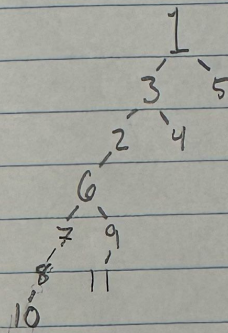A. Infinite   B. Infinite   C. No   D. Infinite   E. Infinite
F. No   G. Infinite   H. Infinite   I. No

[Problem 3]

A.

B.

C. 1,   L=1
   1, 3, 5,   L=2
   1, 3, 2, 4, 5, 8,   L=3
   1, 3, 2, 6, 4, 5, 8, 7, 10,   L=4
   1, 3, 2, 6, 9, 4, 5, 8, 7, 10,   L=5
   1, 3, 2, 6, 9, 11, 4, 5, 8, 7, 10   L=6
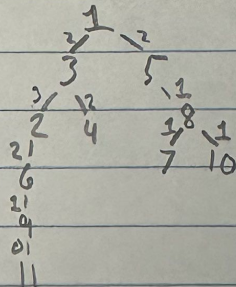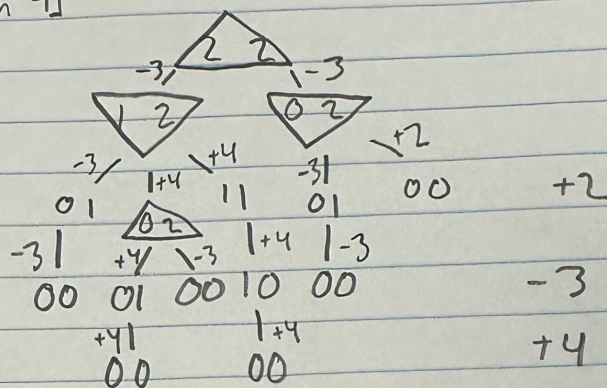
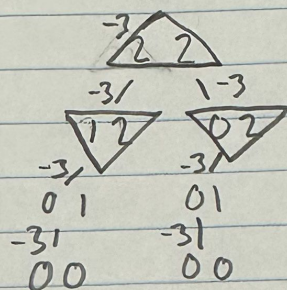D. $\frac{x-n}{4}$, where x = goal node, n = current node

E.

[Problem 4]

A.

B.

[Problem 5]

A. State - An assortment of words assigned a random variable x, where x is less than the number of words, and each is unique.

Neighbor - Exchanging the values of two words (i.e. moving the positions of each word)

Objective Function - Amount of words who are "out of order" (where out of order means the first letter of the next word does not match the last letter of the first words, etc.)

B. Variables - List of words to be ordered

Domain - Number of words to be ordered

Constraints - 1. Current word last letter not the same as next words first letter

2. Current word first letter not the same as previous words last letter.