Midterm Test

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# Problem 1

Let each house at an intersection be a vertex. We can ignore houses that are not at an intersection because the generous yupi’s house is at an intersection. Let roads be edges.

The problem becomes a graph search problem. We need to find the vertex labeled Y.

Use BFS graph search. Use a hashset to store visited vertices.

Assuming that the hashset is implemented properly with constant time query of existence, the BFS graph search will take time to find the generous yupi’s house, where is the number houses at intersections.

# Problem 2

So, in terms of growth rate,

# Problem 3

False.

If we take an instance where , then no crew will rank any captain 3rd, and no captain will rank any crew 3rd.