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1 Question 1

Yes, the model can learn a different representation for each set despite having the same addition output. That is because this problem, where the output space is in $\mathbb{R}^2$, can be seen as two problems where the output is in $\mathbb{R}$, and therefore, where the previous application of Deepsets is valid. (For the sets with 1D elements, we can see that the embedding of two different sets that give the same sum result is different)

2 Question 2

3 Question 3

If we want to compute exactly the influence spread exactly, in a graph containing N nodes, we would need to evaluate the influence on every subgraph with k nodes. Therefore, the total number of subgraphs to evaluate is $C_k^N = \frac{N!}{(N-k)!k!}$

4 Question 4

The extracted seed from the method mentioned can yield a lower influence spread then that of the greedy algorithm because even if we get the top k nodes according to some centrality measure, they can still be connected to nodes where the probability of influence is low, and therefore, on average may yield lower influence spread than other possible networks.