Review

K-subsets: You can use almost the same idea as for the power set: partition solution space into

$$\underbrace{\{H \subseteq S \mid x \in H\}}_{K_x} \text{ and } \underbrace{\{H \subseteq S \mid x \notin H\}}_{\overline{K}_x}.$$

(Note: $x \in S$ arbitrary)

$$\boxed{\mathrm{ksub}(S, k) = K_x \cup \overline{K}_x}$$

How to compute $\overline{K}_x$? Just make a recursive call:

$$\overline{K}_x = \mathrm{ksub}(S \setminus \{x\}, k).$$

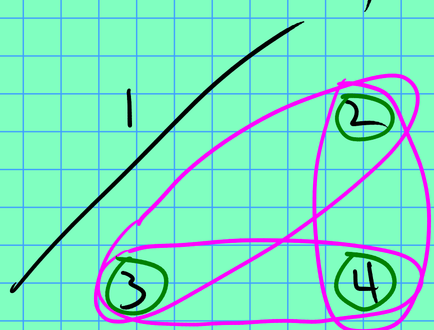
How to compute K_x?

First compute $\mathrm{ksub}(S \setminus \{x\}, \underline{k-1})$ and then add x to all of the resulting sets.

Base case? if $k > |S|$, return $\{\}$

if $k == 0$, return $\{\{\}\}$

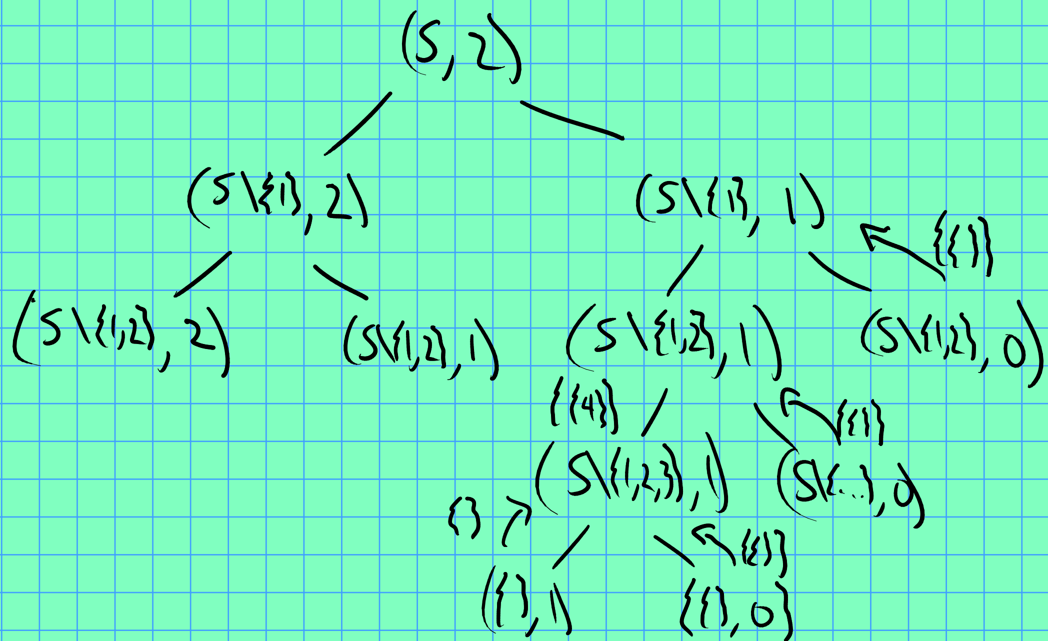
Example: Say $k=2$. Let $x=1$.



Final result: $\{2,3\}, \{2,4\}, \{3,4\},$
$\{1,2\}, \{1,3\}, \{1,4\}$

Recursion tree for the above:

$S = \{1,2,3,4\}, k=2$



It's getting a little messy. I'll leave the rest as an exercise.