Math 2001, Spring 2023. Katherine E. Stange.

1 Assignment

Prove that

$$\binom{n}{k} = \binom{n-1}{k-1} + \binom{n-1}{k}.$$

Hint: This is a "combinatorial proof" like the one in last class. The left side counts subsets of size k of a set of size n. For the right side, break this same counting problem into two cases by fixing one element of the larger set and counting subsets that contain it and those that do not. Reach out if you want more of a hint!