

With Stein's method, we are able to approximate unknown distribution to known distributions like Normal and Poisson distribution. By proving some of the key theorems and Lemmas of Stein's method in the first section of the thesis, we are able to use them to bound interesting problems to Poisson distribution and make further elaborations. In this thesis, there are four problems been solved and bounded by Stein's method. The problem I put most of my efforts in is the Erdos-Renyi random graph. I have generalized the bound to different values of  $k$  and obtained a precise bound to this problem.