CHAPTER 1

INTRODUCTION

From Bertrand's Ballot Problem. In an election, candidate A receives n votes and candidate B receives $(n-1)$ votes number of ways may the ballots be counted so that candidate A is always ahead of candidate B is

$$\frac{1}{n}\binom{2n-2}{n-1},$$

where n is positive integer.

In this research, we show that if candidate A receives n votes and candidate B receives $(n-k)$ votes so that candidate A is always ahead of candidate B then number of ways may the ballots be counted can be written as

$$\frac{k}{n}\binom{2n-k-1}{n-1},$$

where $k \leq n$ are positive integer.

The more generalization of the above result is also discussed. If candidate A receives n votes and candidate B receives $(n-k)$ votes then number of ways may the ballots be counted so that candidate A is always ahead of candidate B at least r votes is equal to

$$\frac{(k-r+1)}{(n-r+1)}\binom{2n-k-r}{n-r}$$

where $r \leq k \leq n$ are positive integer.