Combinatorics

TSS Math Club

March 2023

1 Introduction to Counting

1.1 Rule of Product

1.1.1 Definition

1.1.2 Example 1

How many 4 digit numbers are there with no repeated digits?

1.1.3 Example 2

How many ways are there for 5 people to stand in a row?

1.2 Rule of Sum

1.2.1 Definition

1.2.2 Example 1

1.3 Case Working

1.4 Indirect/Complemnetary Counting

2 Permutation and Combination

2.1 Factorial

2.2 Permutation

2.3 With Repetition

2.4 Combination

2.5 Star and Bars

3 Pascal Triangle

3.1 Pascal Triangle

3.2 Binomial Theorem

3.3 Pascal Routes

4 Probability

4.1 Discrete

4.2 Continuous