Chapter 3 notes

Math 432

Elementary Counting Problems

Let S_n be all permutations of 1, 2, ..., n. (Symmetric group). (So if $n = 3$,

$$S_3 = \{123, 132, 213, 231, 312, 321\}$$

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Clearly $|S_n| = n(n-1)...(3)(2)(1)$. We know this as $n!$. (Take $0! = 1$).

Sterling's Formula

$n!$ is asympototic to $\sqrt{2\pi n}\,(\frac{n}{e})^n$.