MATH 3D Prep: Sigma Notations

Facts to Know:

A way to elegantly write sums:

- $1 + 4 + 9 + \cdots + n^2 =$

- $a_3 + a_4 + a_5 + \cdots + a_{20} =$

- $b_0 + b_1 + b_2 + \cdots =$

Shifting the index:

- Writing the sum in sigma notation in another way.

- Shifting the index up by c means replacing the index i by $j = $ _____ everywhere.

Examples:

1. Rewrite the sum $\displaystyle\sum_{i=1}^{n} \frac{\cos(i-1)}{i}$ as a sum that starts from $i = 0$.

2. Write the power series $\displaystyle x \sum_{n=0}^{\infty} \frac{x^n}{n!}$ in the form $\displaystyle\sum_{n=c}^{\infty} a_n x^n$.