MATH 2B/5B Prep: Sigma Notation

Facts to Know:

Sigma notation is used to write down long sums in a concise form.

Definition:

- $a_1 + a_2 + \cdots + a_{10} =$

- $a_1 + a_2 + \cdots + a_n =$

- $a_1 + a_2 + \cdots =$

Examples:

1. Write $1 + 3 + 5 + \cdots + 99 + 101$ and $\frac{1}{n} + \frac{2}{n} + \cdots + \frac{n}{n}$ in sigma notation.

2. Rewrite $\displaystyle\sum_{j=0}^{n-1} \sin\left(\frac{j+1}{n}\right)$ as a sum starting at 1 instead of zero. (This is called a change/shift of index)

3. Simplify the expression $\sum_{i=1}^{n} \frac{1}{i} - \frac{1}{i+2}$. What happens as n goes to infinity?