

Algebra 2

11-01B Defining and Using Series

Series

- _____ of a sequence
- 2, 4, 6, 8, ... \rightarrow _____
- $2 + 4 + 6 + 8 + \dots \rightarrow$ _____

Summation Notation (Sigma Notation)

- Finite

$$2 + 4 + 6 + 8 = \sum_{i=1}^4 2i$$

Red arrows point from the blank lines to the 4, the $i=1$, and the $2i$ in the summation notation.

- Infinite

$$2 + 4 + 6 + 8 + \dots = \sum_{i=1}^{\infty} 2i$$

Write as a summation

$$4 + 8 + 12 + \dots + 100$$

$$7 + 10 + 13 + 16 + 19$$

Find the sum of the series

$$\sum_{k=5}^{10} k^2 + 1$$

$$\sum_{i=2}^8 \frac{2}{i}$$

Some shortcut formulas

$$\sum_{i=1}^n 1 = n$$

$$\sum_{i=1}^n i = \frac{n(n+1)}{2}$$

$$\sum_{i=1}^n i^2 = \frac{n(n+1)(2n+1)}{6}$$

Find the sum of the series

$$\sum_{k=1}^{10} 3k^2 + 2$$

$$\sum_{i=10}^{25} i$$

600 #25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 47, 63, 65, 67, 69 = 15