

Notes!!! Series

A series is the sum of each term in a sequence.

The partial sum is the sum of the first n terms of the sequence.

We call a partial sum S_n

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Notes!!! Series

Suppose we have the sequence:

$$a_n = \{4, 6, 8, 10, 12, \dots\}$$

The partial sum of each is then:

$$S_n = \{4, 10, 18, 28, 40, \dots\}$$

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Notes!!! Series

Do you see how we are adding the sequence to create the partial sum.

$$a_n = \{4, 6, 8, 10, 12, \dots\}$$

$$S_n = \{4, 10, 18, 28, 40, \dots\}$$

$$S_n = \{4, 4+6, 10+8, 18+10, \overset{28+12}{\cancel{40}}, \dots\} \quad (3)$$

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In Class Work:

1. Consider the arithmetic sequence $\{4, 6, 8, 10, 12, 14, 16, 18\}$.

$$S_4$$

$$S_5$$

$$S_8$$

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Notes!!! Sigma Notation

Σ This thing is called sigma. But in math it means **summation**.

Instead of writing $P_1 + P_2 + P_3 + P_4 + \dots + P_{n-1} + P_n$

we write:

$$\sum_{j=1}^n P_j$$

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Notes!!! Sigma Notation

Term to stop with

$$\sum_{j=1}^n P_j$$

Rule

Term to start with

5

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In Class Work: pg. 8 #1

a. $\sum_{j=1}^5 P_j =$

b. $\sum_{j=3}^5 P_j =$

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Notes!!! Sigma Notation

Example:

$$\{5, 7, 9, 11, 13, 15, 17\}$$

Evaluate $\sum_{j=2}^7 (2j + 3)$.

$$2(2) + 3 + 2(3) + 3$$

⑥

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