

## Warm Up: Pre - Calc

8/28

Write the recursive and the explicit formula for the following arithmetic sequence. What number is term  $A_{12}$ ? What term number is -60 in this sequence?

$$\{A_n\} = \{0, -3, -6, -9, \dots\}$$

Feb 27-7:39 AM

## Solutions to W.U.: Pre-Calc

Recursive:  $A_n = A_{n-1} - 3$

Explicit:  $A_n = 0 + (n - 1) \cdot (-3)$

$$A_n = -3n + 3$$

$$\begin{aligned} A_{12} &= -3(12) + 3 \\ &= -36 + 3 \\ &= -33 \end{aligned}$$

$$A_n = -3n + 3$$

$$\begin{aligned} -60 &= -3n + 3 \\ -63 &= -3n \\ 21 &= n \end{aligned}$$

$$A_n = a_1 + (n-1)d$$

Dec 31-10:07 PM

## Solutions to P.W.:

Dec 31-10:07 PM

### W.A.L.T.:

Understand the connection between sequences and series.

### W.A.S.I.:

~~We can use explicit formulas~~

Mar 7-9:45 AM

**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  $S_n$

$a_n$

1

Dec 31-10:01 PM

**Notes!!! Series**

Suppose we have the sequence:

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

The partial sum of each is then:

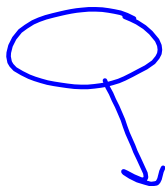
(Series)  $S_n = \{4, 10, 18, 28, 40, \dots\}$

1    2    3

$= 34$

$16 + 8 + 10$

...



Dec 31-10:01 PM

**Notes!!! Series**

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

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

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

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

Dec 31-10:01 PM

**In Class Work:**

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

$$S_4 = 4 + 6 + 8 + 10 = 28 = \sum_{j=1}^4 2n+2$$

$$S_5 = 4 + 6 + 8 + 10 + 12 = 40$$

$$S_8 = 40 + 14 + 16 + 18 = 88$$

$S_5$

$$S_4 + 1$$

Mar 7-1:33 PM

**Notes!!!** Sigma Notation

$\Sigma$  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:

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

4

Dec 31-10:01 PM

**Notes!!!** Sigma Notation

Term to stop with

$\sum_{j=1}^n P_j$  → Rule

Term to start with

5

Dec 31-10:01 PM

## In Class Work: pg. 8 #1

a.  $\sum_{j=1}^5 P_j = P_1 + P_2 + P_3 + P_4 + P_5$

b.  $\sum_{j=3}^5 P_j = P_3 + P_4 + P_5$

Mar 7-1:33 PM

## Notes!!! Sigma Notation

Example:

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

$$2j+3$$

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

$$7 + 9 + 11 + 13 + 15 + 17$$

$$S_7 = 72 + 5$$

Dec 31-10:01 PM

Today's Activities:

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P.W. for tonight:

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Day 4

Dec 31-9:59 PM