

Give an example of something infinite. Write it on your desk.

Give an example of something finite. Write it on your desk.

Today's learning objective:

By the end of class, I will be able to calculate infinite and finite arithmetic series.

1, 3, 5

Today's language objective:

Series vs. Sequence

Infinite vs. Finite

S_n vs \sum
sum

π "p"
"r" ρ
 Σ "s"

Find the series for S_6 of 4, -1, -6, -11, -16, -21

series

Σ

sum

-51

Find the series for S_6 of 4, -1, -6... $u_n = u_1 + (n-1)d$
 $4 + 100(-5)$

$$S_n = \frac{n}{2}(2u_1 + (n-1)d) = \frac{n}{2}(u_1 + u_n)$$

$$u_{101} = 4 + (101-1)(-5)$$

$$u_{101} = (-496)$$

$$S_n = \frac{101}{2}(4 + (-496))$$

$$S_n = \frac{101}{2}(-492)$$

$$S_{101} = (-24846)$$

$$\frac{6}{2} * (4 + -2)$$

$$3 * (-17)$$

Challenge: Find S_{101} for the series above.

Find the series for S_6 of 4, -1, -6...

Find the series for $\sum_{n=1}^6$ of 4, -1, -6...

$$S_n = \frac{n}{2}(2u_1 + (n-1)d) = \frac{n}{2}(u_1 + u_n)$$

Challenge: Find S_{101} for the series above.

Find u_1 and d if $S_{40} = 1900$ and $u_{40} = 106$.

$$S_n = \frac{n}{2}(2u_1 + (n-1)d) = \frac{n}{2}(u_1 + u_n)$$

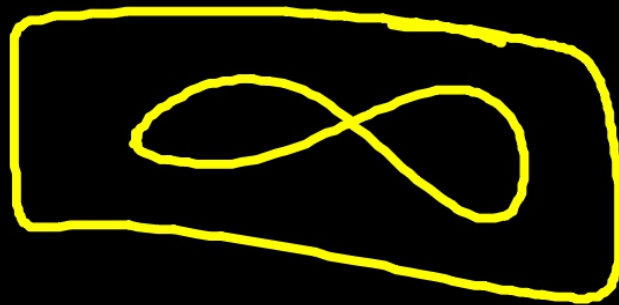
$$u_1 = -11 \quad d = 3 \quad S_{40} = \sum_{i=1}^{40} u_i$$

The n^{th} term of an arithmetic sequence

$$u_n = u_1 + (n-1)d$$

Find $\sum_{n=1}^{\infty}$ for $-13, -2, 9, 20, \dots$
 $= S_{\infty}$

$$S_n = \frac{n}{2}(2u_1 + (n-1)d) = \frac{n}{2}(u_1 + u_n)$$



The n^{th} term of an arithmetic sequence

$$u_n = u_1 + (n-1)d$$

Find $\sum_{n=1}^{\infty}$ for 13, -2, -17, -32,

-∞

In an arithmetic sequence the second term is 7 and the sum of the first five terms is 50. Find the common difference of this arithmetic sequence.

$$50 = \frac{5}{2}(2u_1 + (5-1)d)$$
$$50 = 5u_1 + 10d$$
$$7 = u_1 + d$$
$$-35 = -5u_1 - 5d$$
$$15 = 5d$$
$$d = 3$$

$u_2 = 7$
 $S_5 = 50$

$$S_n = \frac{n}{2}(2u_1 + (n-1)d) = \frac{n}{2}(u_1 + u_n)$$

The n^{th} term of an arithmetic sequence

$$u_n = u_1 + (n-1)d$$

arithmetic sequence the second term is 7 and the sum of the first five terms is 25. Find the common difference of this arithmetic sequence.

$$S_n = \frac{n}{2}(2u_1 + (n-1)d) = \frac{n}{2}(u_1 + u_n)$$

The n^{th} term of an arithmetic sequence

$$u_n = u_1 + (n-1)d$$

Have

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weekend Σ

