Sequences

A sequence is a fct w/domain $\{1, 2, 3, \ldots\}$

Ex1: write down terms in the sequence $f(x) = 3x - 5$

Notation ⟹ in general, we would write $a_N = 3N - 5$
where the notation implies that the fct is a sequence.

Ex2: $a_N = -2N + 7$ $\quad b_N = N^2 + N$ $\quad c_N = (-1)^N \cdot \frac{N+1}{N}$

Ex3: Define a_N for...

$1, 4, 9, 16, \ldots$

$\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \ldots$

$1, 1, 2, 3, 5, 8, \ldots$

Arithmetic Sequences

Ex4: $1, 4, 7, 10, \ldots$

$10, 8, 6, 4, \ldots$

common difference d. and 1st term a_1.

Ex5: Find the 10^{th} term in a_N if $a_1 = -3$ and $d = 2$

Derive $a_N = a_1 + (N-1)d$.

Ex6: If $\{a_N\}$ begins $4, 1, -2, -5$

a) find a_{37}

b) find a_N.

6.1a
2/2

Carl Gauss and the anithmetic series

Derive $S_N = \frac{(a_1 + a_N)N}{2}$

Ex 7: Find $17 + 28 + 39 + \ldots + 1502 + 1513$