Precalculus

10-01 Sequences

Sequence

- List of numbers following a rule
- 0, 3, 6, 9, 12 ← _____ (ends)
- 0, 3, 6, 9, 12, … ← _____ (doesn't end)

- $n = 1,\ 2,\ 3,\ 4,\ 5,\ \ldots$ (term _____) like *x*
- $a_n = 0,\ 3,\ 6,\ 9,\ 12,\ \ldots$ (term _____) like *y*

Find the 1st 5 terms of $a_n = 5 + 2n(-1)^n$

Write the rule for the n^{th} term.

1, 5, 9, 13, 17, …

2, –9, 28, –65, 126, …

Recursive Rules

- Use the value of one term to find the _____ term.
- a_n means _____ term
- a_{n-1} means _____ term

Find the first 5 terms. $a_1 = 6, a_n = a_{n-1} + 1$

Factorial (!)

- Product of a _____ number with all the _____ numbers _____ than it through 1.
- $6! = 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$
- $5! = 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$
- $0!$ = _____

Simplify $\frac{9!}{3!7!}$

$\frac{(n+1)!}{n!}$