JANUARY 8

How are sequences similar to or different from functions?

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Students will verbally explain how to find the limit of sequences

(using the words: converge, diverge...)

A sequence converges if

the sequence has a limit

if $\lim_{n \to \infty} a_n = L$ (where L is any number),

then the sequence converges to L

A sequence diverges if

the sequence does not have a limit

if $\lim_{n \to \infty} a_n$ DNE (or $= \pm\infty$),

then the sequence diverges

$a_n = \frac{n^2+3}{2n^2-1}$

$\lim_{n\to\infty} a_n = ?$

$$\lim_{n\to\infty} \frac{n^2+3}{2n^2-1} = \lim_{n\to\infty} \frac{n^2}{2n^2} = \frac{1}{2}$$

$a_n = \frac{n-1}{4n^2}$

$\lim_{n\to\infty} a_n = ?$

$$\lim_{n\to\infty} \frac{n-1}{4n^2} = \lim_{n\to\infty} \frac{n}{4n^2} = \lim_{n\to\infty} \frac{1}{4n} = 0$$

Absolute Value Theorem

If $\lim_{n\to\infty} |a_n| = 0$

Then $\lim_{n\to\infty} a_n = 0$

If $\lim_{n\to\infty} |a_n| \neq 0$

Then a_n diverges

(if a_n is alternating)