

# Lecture 35

Friday, March 14, 2025 2:54 PM

## Limit of a sequence:

A sequence can be viewed as a function defined on the set of positive integers

Notation:  $\lim_{n \rightarrow \infty} a_n = a$  or  $\lim a_n = a$ .

Work on some problems on the worksheet.

## Limits of special sequences:

$\lim r^n = 0$  if  $|r| < 1$

Some common methods to find the limit of a sequence:

- 1) View  $a_n$  as a function of  $n$  (i.e.  $a_n = f(n)$ ) and see if  $f$  can be extended to a function on the real line. Then you might be able to use some standard techniques of finding  $\lim_{x \rightarrow \infty} f(x)$ , including the L'Hospital Rule.
- 2) Use the Squeeze Theorem: if  $b_n \leq a_n \leq c_n$  and  $\lim b_n = \lim c_n = a$  then  $\lim a_n = a$ .