

3. Use the definition of convergence of a sequence, prove that the sequence $\left\langle \frac{n-1}{n+2} \right\rangle_{n=1}^{\infty}$ converges to 1.

Pf: $\lim_{n \rightarrow \infty} \left\langle \frac{n-1}{n+2} \right\rangle = 1$?
 Let $\epsilon > 0$ be integer N st $\frac{1}{N} < \left(\frac{1}{2}\right)$?
 Let $n = N + 1$ so Can N be 3?

Let $n \geq N$:

Then $\left| \frac{n-1}{n+2} - 1 \right| = \left| \frac{n-1-(n+2)}{n+2} \right| = \left| \frac{-1}{n+2} \right|$

$$= \frac{1}{n+2} < \left(\frac{1}{n}\right) = \frac{1}{n} \leq \left(\frac{1}{n}\right) < \epsilon$$

Hence $\left| \frac{n-1}{n+2} - 1 \right| < \epsilon$

Therefore, $\left\langle \frac{n-1}{n+2} \right\rangle_{n=1}^{\infty}$ converges to 1