

Math 206 — Convergence of sequences

Problem 1. Each of the following sequences converges. Make a conjecture about the limit and prove your conjecture.

a. $x_n = 1/n^2$ for $n \in \mathbb{Z}^+$

b. $x_n = 5 + (-1)^n/\sqrt{n}$ for $n \in \mathbb{Z}^+$

c. $x_n = \sin(n)/(n^2 + 1)$ for $n \in \mathbb{N}$

Problem 2. Prove that the sequence (x_n) given by $x_n = \sin(n\pi/2)$ for all $n \in \mathbb{N}$ diverges.