

WRITE YOUR NAME:

MAC 2312 WRITTEN HOMEWORK #8

Due Tuesday March 12th, in Canvas

Question 1. For each of the following, evaluate the limit or show that it does not exist.

(a) $\lim_{n \rightarrow \infty} \frac{n^3}{n^4 + 1}$

(b) $\lim_{n \rightarrow \infty} (\ln(n^3 + 1) - \ln(3n^3 + 10n))$

(c) $\lim_{n \rightarrow \infty} (5(-1.01)^n)$

(d) $\lim_{n \rightarrow \infty} \frac{3^n}{3^n + 4^n}$

Question 2. For each of the following, evaluate the geometric series or show that it diverges.

(a) $1 + \frac{1}{\pi} + \frac{1}{\pi^2} + \frac{1}{\pi^3} + \cdots$

(b) $\sum_{k=3}^{\infty} \frac{3 \cdot 4^k}{7^k}$