Name:

Math 116 Exam 3

March 31, 2022

Directions:

1. WRITE YOUR NAME ON THIS TEST!
2. Except where indicated, merely finding the answer to a problem is not enough to receive full credit; you must show how you arrived at that answer.
3. Unless otherwise indicated, decimal approximations for a numerical answer accurate to 4 decimal places are acceptable.
4. If you have a question, raise your hand or come up and ask me.

1) Determine whether the following series are geometric or not. If it is, find the sum or show the series diverges.

a) $\displaystyle\sum_{n=3}^{\infty} \frac{5^n}{n^2+7}$

b) $\displaystyle\sum_{n=4}^{\infty} \frac{14^{n-8}}{3^{3n-2}}$

2) Using the definition of convergence for a series, find the sum of

$$\sum_{n=1}^{\infty} \left(2^{1/\sqrt{n}} - 2^{1/\sqrt{n+1}}\right)$$

or show the series diverges.

3) Determine whether the following sequence converges or diverges. If it converges, find the limit.

$$a_n = \frac{(-17)^n}{(2n)!}$$

Answers without work will count for nothing.