Math 1 - Homework #10

October 7, 2019

This homework should be turned in at the boxes outside 108 Kemeny Hall by **4:00pm on Friday, October 11th**. Unless otherwise stated, all problems can be found in the course textbook.

1 Practice Problems (Optional)

Feel free to do these problems for your own practice. They are not graded, and you don't need to turn them in.

1. Find the limit of each of the following sequences, if it exists. If the limit does not exist, say if the sequence diverges to infinity, negative infinity, or neither.

   (a) $a_n = \frac{n^6}{-n^3+n-9}$

   (b) $a_n = \left(\frac{4}{3}\right)^n - 6$

   (c) $a_n = \frac{(-1)^n}{2n}$

   (d) $a_n = \frac{-1}{3n}$

   (e) $a_n = \frac{n}{n^3+2n+1}$

2. Use the Squeeze Theorem to evaluate the following limits.

   (a) $a_n = \left(-\frac{2}{3}\right)^n$

   (b) $a_n = \frac{\cos(n^3)+1}{n}$

2 Assigned Problems (Required)

These problems should be turned in and will be graded.

1. Find the limit of each of the following sequences, if it exists. If the limit does not exist, say if the sequence diverges to infinity, negative infinity, or neither.

   (a) $a_n = \frac{-2}{n}$

   (b) $a_n = \frac{(-1)^n}{n^2+2}$

   (c) $a_n = \cos(n^4)$

   (d) $a_n = -1 + \left(\frac{1}{3}\right)^n$

   (e) $a_n = \frac{n^5+n^4+n^3+n^2+n+1}{n^5+n^3+1}$

   (f) $a_n = 5 + \frac{n}{5}$

2. Use the Squeeze Theorem to evaluate the following limits.

   (a) $a_n = \frac{\sin\left(\frac{1}{n}\right)}{n^3}$

   (b) $a_n = \frac{(-1)^n}{n!}$