Differential and Integral Calculus II Math 2943-030 Spring 2014

9. Homework

Show all your work! Justify your answers!

Read Section 11.1.
Do the problems
Sec.: 11.1 #' 6, 12, 19, 22 39, 58, 62.
and

1) List the first five terms of the sequence (a_n) with

$$a_n = \frac{n-3}{2n+1}\,.$$

If possible find the limit.

2) Is the sequence (a_n) with

$$a_n = \frac{\cos 3n}{1+\ln n}\,.$$

convergent? If it is convergent, find its limit.

3) Determine whether the sequence (a_n) with

$$a_n = \frac{3n-3}{n^2-10}\,,$$

is convergent, if it is convergent, find its limit.

4) Show that the sequence (a_n) defined recursively by

$$a_1 = 2 \;\text{ and }\; a_{n+1} = \frac{1}{3}(2a_n+3)\,,$$

is bounded above by 3, bounded below by 0, and monotone increasing. Then find its limit.

5) Show that the sequence (a_n) defined recursively by

$$a_1 = \sqrt{3} \;\text{ and }\; a_{n+1} = \sqrt{3+a_n}\,,$$

is bounded above by $\sqrt{6}\,,$ and if possible find the limit.