

Mathematics UN1102 Section 1, Fall 2019 — Homework 6

Due date: 1:10pm on Wednesday, October 23, 2019 on Gradescope.

Instructions: Please present your solutions in a legible, coherent manner. Unless otherwise specified, you should show your work; you will be evaluated on both your reasoning and your answer. Points may be deducted for unclear or messy solutions.

Collaboration and Academic Integrity: You are encouraged to collaborate on homework. However, you must write your solutions alone and **understand what you write**. When submitting your homework, list in the space below any sources you used (in print, online, or human) other than the textbook or the teaching staff.

Problems: All problems are from the course textbook *Calculus: Early Transcendentals* (8th edition).

- Section 11.2: 64, 75, 85, 86
- Compute

$$X = \sum_{n=1}^{\infty} \frac{1}{n^2 + 7n + 12} = \sum_{n=1}^{\infty} \frac{1}{(n+3)(n+4)}$$

in the following steps:

- Write $1/(x^2 + 7x + 12)$ as a sum of partial fractions.
- Use your answer to (a) to write an explicit expression for the m^{th} partial sum

$$s_m = \sum_{n=1}^m \frac{1}{n^2 + 7n + 12}.$$

Your answer should be expressed in terms of m .

- Use your answer to the previous part to compute the exact value of $X = \lim_{m \rightarrow \infty} s_m$.
- Section 11.3: 19, 23, 29, 34, 35