This week on the problem set you will get more practice with sequences and their convergence. You will also see lots of examples involving series. Starred questions are usually (though not always) more difficult and/or not suitable for exams however are well worth thinking about!

Homework: On Friday 17 May the following questions will be due as homework.

$$11.1.73, 11.1.75, 11.2.53$$

Extra condition for 11.1.75*:* You should find a solution a_n such that $|a_n|$ is *not* constant.

The questions are repeated below for convenience. Your solutions should be written up neatly and in full sentences with a clear logical flow (Top tip: read your solutions aloud, is every word you say written down? Do you have verbs, punctuation, etc?). Rough drafts, or work containing no words will not be graded.

The questions have been taken from the textbook:

J. Rogawski, C. Adams, *Calculus, Single Variable*, 3$^{\text{rd}}$ Ed., W. H. Freeman & Company,

and refer to the section and question number in the textbook.

1. (Section 11.1) 35, 36, 40, 44, 46, 48, 53, 57, 62, 63, 64, 67, 70, 73, 75, 76, 79, 83, 85*, 86*.
2. (Section 11.2) 2, 12, 13, 14, 16, 17, 20, 21, 26, 29, 47, 53, 64*, 65*.

Homework questions:

3. (11.1.73) Show that $a_n = \dfrac{3n^2}{n^2+2}$ is increasing. Find an upper bound.
4. (11.1.75) Give an example of a divergent sequence $\{a_n\}$ such that $\lim_{n\to\infty} |a_n|$ converges. *In addition,* your solution should be such that $|a_n|$ is not constant.
5. (11.2.53) Find the total length of the infinite zigzag path in Figure 5 (each zag occurs at an angle of $\frac{\pi}{4}$).

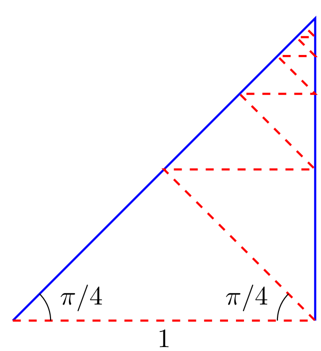

Figure 1: Figure 5