Math 427 Autumn 2019

**Homework 1** **Due Friday, October 4**

**Section 1.1**: 5, 11, 15

**Section 1.2**: 1, 2

**Section 1.3**: 4, 6, 9

**Additional problems**

1. Consider $z = 1+3i$ and $w = 2-5i$. Plot $z, w, z+w$ in the plane, find $|z|$, $|w|$, $|z+w|$, and check that the triangle inequality holds (you can use your calculator to check).

2. Use the ratio test to find the radius of convergence for the following series:

$$\tfrac{1}{2}z - \tfrac{1}{4}z^2 + \tfrac{1}{6}z^3 - \tfrac{1}{8}z^4 + \cdots = \sum_{j=1}^{\infty} \frac{(-1)^{j+1}}{2j} z^j$$

$$\frac{z}{2} + \frac{z^3}{4} + \frac{z^5}{8} + \frac{z^7}{16} + \cdots = \sum_{j=0}^{\infty} \frac{z^{2j+1}}{2^{j+1}}$$