Homework 3.
Due October 19.

1. Textbook, Problem 21 on page 43.

2. Textbook, Problem 10 on page 57.

3. Textbook, Problem 11 on page 57.

4. (MATH 9024 only) Prove that if f is $\mathbb{R}$-differentiable at a point $a \in \mathbb{C}$ then

$$\lim_{\epsilon \to 0} \frac{1}{\epsilon^2} \int_{\{|z-a|=\epsilon\}} f(z)dz = 2\pi i \frac{\partial f}{\partial \overline{z}}(a).$$