Section 1.1 (calculus review) Worksheet:

1. Definitions 1.3 mentions complex numbers: how are they represented? What is $|x - x_i|$ for complex numbers?

2. Give an example of a function continuous everywhere, but not differentiable everywhere.

3. Give an example of a function not continuous anywhere!

4. How can we use Rolle's theorem to prove the Mean Value Theorem?

5. Try to use Definition 1.10 to **prove** that

$$\int_0^1 x dx = 1/2$$

6. How can the Intermediate Value Theorem fail if the function f is not continuous?

7. RE Theorem 1.11: What can go awry if g is allowed to change sign on $[a, b]$? Do we need that stipulation?

8. Explain what the Generalized Rolle's Theorem tells us in the case when $n = 2$.