Read Miranda, Sections 1.1–1.3

**Problems.** Problems to be turned in for grading

1. Problem I.1.F

2. Prove the statements on page 4 of the text
   (a) Two complex atlases are equivalent if and only if their union is also a complex atlas
   (b) Every complex atlas is contained in a unique maximal complex atlas *Hint: use Zorn’s lemma*
   (c) Two atlases are equivalent if and only if they are contained in the same maximal complex atlas

3. Problem I.2.A

4. Consider the affine plane curve $C$ associated with the polynomial
   \[ F(x, y) = x^2 + y^3 + 1. \]
   Show that $C$ is nonsingular and exhibit an explicit atlas.

**Additional Problems.** These problems are also to be done, but will neither be collected nor graded.

1. Problem I.1.A

2. Problem I.1.G

3. Problem I.1.H

4. Problem I.2.C

5. Problem I.2.I