

## Supplementary Handout 0: About the homework and supplementary reading assignments

There are five kinds of assignments in the document "Supplementary Reading and Suggested Homework Assignments":

**Exercises** are designed to help you practice the basic skills of

- implementing algorithms (computational rules) until they are routine to you;
- using defined terms in a variety of settings until the terms have real meaning to you.

Your instructor may assign a different set of exercises for you to turn in, but you are ultimately responsible for developing the skills required to do any problem in the Exercise lists.

**Problems** are designed to give you experience in putting to use the new (and old) skills you have learned. They more closely mimic the actual use you will make of the material in future courses and professional settings. Exercises are analogous to learning how to run a lathe or table saw, fit and glue a joint, apply a good finish and measure accurately. Problems are analogous to carrying out a small carpentry building project. You can't do the latter properly without being good at the former, but being good at the former is not sufficient to accomplish the latter.

**Supplementary Exercises** are designed to accustom you to the more complex computations that will be required of you on exams and in later mathematical work. [If you learned, e.g., to use the quadratic formula in the Exercises, then a Supplementary Exercise might be to solve  $5 \sin^2(3x) - 7 \sin(3x) + 4 = 0$  or  $5x - \sqrt{x} + 4 = 0$ , each of which requires first that you recognize the equation as quadratic in some  $u$  ( $u = \sin(3x)$  and  $u = \sqrt{x}$  respectively), next that you solve the quadratic, and then that you translate the solutions in  $u$  to solutions in  $x$ .] Each supplementary exercise is chosen to alert you to a subtlety or to give you experience with a form of complexity that you will be challenged with in future applications of the skills at hand. The better you master these exercises, the easier a time of it you will have later.

**Worksheet Practive** These are problems gathered from many sources destined to test your computational skill in applying various calculus techniques. For example, once you know all the various techniques for finding the derivatives, you are ready to try the Derivative Worksheet. Hints and solutions will be made available.

**Supplementary Reading** assignments are designed to supplement and in some cases clarify material in the textbook.