

## Homework Assignment for Chapter 11

1. Section 11.2: Problems 1, 33, 41.

2. Section 11.2: Prove the following generalization of problem 41.

Let  $(x(t), y(t))$ ,  $a \leq t \leq b$ , be a parametrization of a plane curve and  $f : [0, 1] \mapsto [a, b]$  be any monotone increasing function with continuous derivative. This gives another parametrization of the curve as  $(\bar{x}(s), \bar{y}(s)) = (x(f(s)), y(f(s)))$ ,  $0 \leq s \leq 1$ . Show that the length of  $(x(t), y(t))$ ,  $a \leq t \leq b$  is the same as  $(\bar{x}(s), \bar{y}(s))$ ,  $0 \leq s \leq 1$ .

3. Section 11.4: Problems 14, 19, 21.

4. Section 11.5: Problems 7, 20, 23.