

# Essentials of Calculus

## Homework 4.4

### Profit

1. It costs a company  $C(q) = 200 + 20q$  dollars to make  $q$  objects, which it can sell for  $R(q) = 1000q - 2q^2$  dollars.
  - a) What is the profit function?
  - b) How many objects should the company make to maximize profits?
2. It costs a company  $C(q) = 500 + 5q^2$  dollars to make  $q$  things, which it can sell for  $R(q) = 100q$  dollars.
  - a) What is the profit function?
  - b) How many things should the company make to maximize profits?
3. It costs a company  $C(q) = 10000 + 10000q + 5q^2$  dollars to make  $q$  objects, which it can sell for  $R(q) = 40000q - 5q^2$  dollars.
  - a) What is the profit function?
  - b) How many objects should the company make to maximize profits?
  - c) If it can only make up to 10000 objects, how many objects should the company make to maximize profits?
  - d) If it can only make up to 1000 objects, how many objects should the company make to maximize profits?