1. The cost in dollars to produce $x$ tons of a certain product is $C(x) = 525 + 400x - 54x^2 + x^4$.
   a) What level of production minimizes the marginal cost?
   b) What level of production minimizes the average cost?

2. A store has been selling skateboards at a price of $40 per board and at this price skaters have been buying 45 boards a month. The owner of the store wishes to raise the price and estimates that for $1 increase in the price, 3 fewer boards will be sold each month. If each board costs the store $29, at which price should the store sell the boards to maximize profits?

3. Farmers can get $2 per bushel for the potatoes on July 1, and after that the price drops 2 cents per bushel per day. On July 1 a farmer has 80 bushels of potatoes in the field and estimates that the crop is increasing at a rate of 1 bushel per day. When should the farmer harvest the potatoes to maximize revenue?

4. You make and sell $x$ pizzas. In dollars, your income is $R(x) = 10x - 0.03x^2$ and your cost is $C(x) = 3 + 4x + 0.1x^2$.
   a) Describe the following as functions of $x$: The profit, the average profit per pizza, and the marginal profit per pizza.
   b) What is the demand function for your business? If the price of a pizza is $p$, how many pizzas should you expect to sell?
   c) How many pizzas should you make to maximize your profits? What will the price of a pizza be?