

Some Calculus Problems in Business

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?