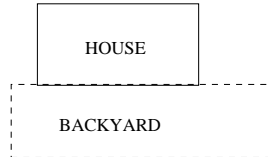


This assignment is due by 3:30pm on April 9, 2009 You can turn it in to me in class or drop it by the office, **Blocker 640D**. Be sure that you follow the homework rules, they can be found on your syllabus. Please work the problems in the order that they are listed.

1. A property owner wants to fence a rectangular backyard (the 50 foot back wall of the house will help enclose the backyard). If he has 1200 feet of fencing what is the largest area he can fence? Hint: think about shifting the yard to the left or right when setting up the problem.



2. A company uses 1680 gallons of a particular chemical during a single year. This chemical can only be bought in 1 gallon containers and costs \$545 for each gallon when bought from a supplier. Due to government regulations and the nature of the chemical, it cost \$6,000 to store a container for one year. The supplier of this chemical charges \$350 to process each order. How many times during the year should the company place orders for this chemical and how many containers should be order each time so that these cost will be minimized.
3. A hockey team plays in an arena with a seating capacity of 15,000 spectators. With ticket prices at \$12, average attendance at a game has been 10,000. If the price is lowered to \$10 then the average attendance increases to 14,000. Assume that the relationship between the demand and price is linear. Let **x be the number of tickets sold**. The cost of maintaining the stadium is related to the number of tickets sold according to $C(x) = 2600 + 4x$. Find the ticket price that produces the maximum profit.

4. Integrate the following.

(a) $\int \frac{x^5 + 3x^2 + 4}{x^3} dx$

(b) $\int \frac{3}{x^2} + \frac{1}{5x^4} + e^{3x} dx$

5. Integrate the following.

(a) $\int (6x^5 + 2)(x + 5) dx$

(b) $\int \frac{1}{e^{4x}} + \sqrt[3]{x} dx$

6. Find the particular antiderivative that satisfies the condition.

(a) $f'(x) = 12x^3 - 21x^2 + \sqrt{x^5}$ and $f(1) = 5$

(b) $f'(x) = 4x^3 + 20e^{5x} + 2$ and $f(0) = 15$

7. Integrate the following.

(a) $\int \frac{x^4}{(4 - x^5)^3} dx$

(b) $\int (10x^4 + 18x^2)(x^5 + 3x^3 + 2)^7 dx$