HOMEWORK 4 - MATH 111
DUE DATE: Monday, February 16
INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. An object is thrown upward with initial velocity 64 ft/sec from an altitude of 16 feet. Then its height, in feet, above the ground after t seconds is given by $h(t) = 64t - 16t^2 + 16$. Find the maximum height attained by the object. Find the number of seconds that it takes for the object to hit the ground.

2. The manager of a small appliance store has found that at a price of $p(x) = 450 - 3x$ per appliance, x appliances will be sold.

   (a) Find an expression for the total revenue from the sale of x appliances.

   (b) Find the number of appliances that have to be sold to maximize the revenue.

   (c) Find the maximum revenue.

3. Find the intercepts, construct the sign table and then roughly sketch the graph of the function $f(x) = (x + 3)(x - 2)(x - 5)$.

4. Find the intercepts, construct the sign table and then roughly sketch the graph of the function $f(x) = x^2(x + 3)(x - 3)$.

5. Find the intercepts, construct the sign table and then roughly sketch the graph of the function $f(x) = x^4 - 7x^2$.

6. Find the horizontal and the vertical asymptotes, the x- and the y-intercepts, construct the sign table and then roughly sketch the graph of $f(x) = \frac{-2}{3x+7}$.

7. Find the horizontal and the vertical asymptotes, the x- and the y-intercepts, construct the sign table and then roughly sketch the graph of $g(x) = \frac{2x+1}{3x-2}$.

8. Find the horizontal and the vertical asymptotes, the x- and the y-intercepts, construct the sign table and then roughly sketch the graph of $f(x) = \frac{x^2+4x}{x^2-3x-4}$.