

## HOMEWORK 5 - MATH 111

DUE DATE: Friday, October 11

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. Find the vertex, the opening direction, the intercepts and make a rough sketch of the graph of the function  $f(x) = -x^2 - 2x$ .
2. Do the same for the function  $g(x) = x^2 - x - 2$ .
3. Find the vertex and the opening direction of the graph of  $h(x) = (x - 1)^2 - 3$ .
4. Find the equation of the function whose graph is a parabola with vertex  $V = (1, 1)$  passing through  $(-1, 0)$ .
5. When the price of a bizz is  $p(x) = 200 - x$ , then  $x$  bizz are sold. Find an expression for the revenue  $R(x)$  in terms of the number  $x$  of bizz. Find the number of bizz that have to be sold to maximize the revenue and the maximum revenue.
6. An object is thrown upward with initial velocity 2 feet per second from an initial height of 3 feet. Then its height after  $t$  seconds is given by  $h(t) = -t^2 + 2t + 3$ . Find the maximum height that the object will attain and how long it will take for the object to hit the ground.
7. Create the sign table and graph the function  $f(x) = 2x^3 - 3x^2$ .
8. Find the horizontal and vertical asymptotes of the function  $g(x) = \frac{x+7}{x-3}$ . Then roughly sketch its graph.