EXAM 2 - MATH 111

DATE: Friday, February 18
INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 3 points. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Use the "small table of values" method to roughly sketch the graph of the piece-wise defined function $f(x) = \begin{cases} -2x-6, & \text{if } -2 \leq x < 0 \\ -2, & \text{if } 0 \leq x < 1 \\ -x+5, & \text{if } x \geq 1 \end{cases}$

2. Perform the following steps in the order requested: Find the vertex, the opening direction, the intercepts and roughly sketch the graph of the function $f(x) = -x^2 - 2x + 3$.

3. Find the formula of the parabola with vertex $V = (-1, -4)$ passing through the point $(3, 1)$.

4. A rectangular enclosure is to be built with three sides made out of redwood fencing at a cost of \$15 per running foot and the fourth side made out of cement blocks at a cost of \$30 per running foot. \$900 is available for the project. What are the dimensions of the enclosure with maximum possible area and what is the area?

5. Perform the following steps in the order requested: Find the intercepts, create the sign table and then roughly sketch the graph of the polynomial function $f(x) = x^3 - x^2 - 6x$.

6. Perform the following steps in the order requested: Find the domain, the intercepts, create the sign table, find the asymptotes and then roughly sketch the graph of the polynomial function $f(x) = \frac{x-2}{x^2-1}$.