EXAM 2 - MATH 140

DATE: Wednesday, February 16
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. Solve the radical equation $2 + \sqrt{12 - 2x} = x$.

2. Solve the absolute value inequality $|x^2 + x| > 12$.

3. Use your knowledge of graphing techniques and of piece-wise defined functions to graph the piece-wise defined function

$$f(x) = \begin{cases} x^2 - 2, & \text{if } x \leq -1 \\ x, & \text{if } -1 < x < 0 \\ -\sqrt{x} + 1, & \text{if } x \geq 0 \end{cases}$$

4. Perform the following steps in the order given: Find the intercepts, create the sign table and roughly sketch the graph of the polynomial function $f(x) = (x + 5)(x + 1)(x - 2)^2$.

5. Perform the following steps in the order given: Find the domain, the intercepts, create the sign table, find the asymptotes and roughly sketch the graph of the rational function

$$f(x) = \frac{(x + 1)(x - 2)^2}{x^2(x + 2)}.$$

6. Find the domain of the function

$$f(x) = \sqrt{\frac{x^2 - x}{(x - 5)(3 - 9x)}}.$$