HOMEWORK 3 - MATH 111

DUE DATE: Monday, February 9
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 domain of the function $f(x) = \sqrt{x^2 - 3x + 2}$.
2. Find the domain of the function $f(x) = \sqrt[4]{\frac{x-7}{x^2-3x-10}}$.
3. Graph the function $f(x) = \begin{cases} -x + 7, & \text{if } x \leq 1 \\ 2x - 3, & \text{if } x > 1 \end{cases}$
4. Graph the function $f(x) = |2 - 3x|$.
5. Write a cost function for a book company to produce x algebra books if the company has fixed costs $\$30,000$ and each book costs \$6 to produce. Then calculate
   (a) the marginal cost per book,
   (b) the total cost to produce 5000 books,
   (c) the average cost per book for 5000 books.
6. Find the vertex, the opening direction, the x- and the y-intercepts and then make a rough sketch of the graph of the function $f(x) = -x^2 + 6x - 6$.
7. Find the vertex, the opening direction, the x- and the y-intercepts and then make a rough sketch of the graph of the function $f(x) = (x - 2)^2 - 1$.
8. Find the equation of the parabola that has vertex at $V = (3, -4)$ and passes through the point $(5, 4)$.