

EXAM 2 - MATH 111

DATE: Friday, February 20

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. Graph the function $f(x) = \begin{cases} -2x - 5, & \text{if } x < 1 \\ x + 2, & \text{if } x \geq 1 \end{cases}$
2. Find the vertex, the opening direction, the x - and the y -intercepts and then make a rough sketch of the graph of the function $f(x) = -x^2 + 2x + 3$.
3. Find the equation of the parabola that has vertex at $V = (4, -1)$ and passes through the point $(-1, 5)$.
4. The manager of a cloth store has found that at a price of $p(x) = 600 - 3x$ per jacket, x jackets will be sold.
 - (a) Find an expression for the total revenue from the sale of x jackets.
 - (b) Find the marginal revenue at 180 jackets.
 - (c) Find the number of jackets that have to be sold to maximize the revenue.
 - (d) Find the maximum revenue.
5. Find the intercepts, construct the sign table and then roughly sketch the graph of the function $f(x) = -x^3 - x^2 + 12x$.
6. Find the domain, the x - and the y -intercepts, construct the sign table, find the horizontal and the vertical asymptotes and then roughly sketch the graph of $g(x) = \frac{x-2}{x^2-4x+3}$.