

## EXAM 1 - MATH 111

DATE: Wednesday, September 22

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!!

- Find the equation of the line that passes through the points  $(-2, 3)$  and  $(4, -1)$ .
  - Find the equation of the line that is parallel to the line in (a) and passes through  $(-1, -3)$ .
- Suppose that the cost  $C$  in terms of the number of items  $x$  produced is given by  $C = 75x + 5,000$  and the revenue  $R$  in terms of  $x$  is given by  $R = 100x$ . Find the break-even point and then evaluate the break-even revenue.
- Solve the linear inequality  $2x - (3 - 3x) \leq -7x - 9$  and graph its solution set.
- Solve the rational inequality  $\frac{x^2 - 2x - 8}{x - 1} \leq 0$  and graph its solution set.
- Find the domain of the function  $f(x) = \sqrt{-x^2 - 3x + 10}$ .
- Roughly sketch the graph of the piece-wise defined function  $f(x) = \begin{cases} -x, & \text{if } x < 0 \\ -\frac{2}{3}x + 2, & \text{if } x \geq 0 \end{cases}$ .