

## MA 100 SAMPLE MIDTERM

Be sure to write your name on your blue book! Please try to show your work and give justifications for your answers. It is permitted to use calculators on the midterm. Try not to spend too much time on any single problem; if you get stuck on a problem leave a partial answer and move on to the next.

- (1) (5 pts) What is the slope of the line described by the equation  $y = 3x + 5$ ?
- (2) (10 pts) Factor the polynomial  $x^2 - 9$ .
- (3) (10 pts) Find all solutions of the equation  $x^3 + 4x^2 + 4x = 0$ .
- (4) (5 pts) Check your solutions to the problem above in the original equation.
- (5) (10 pts) Solve  $|x - 2| > 3$ .
- (6) (10 pts) Simplify  $\frac{x\sqrt{y}}{x^{-2}y^2}$ .
- (7) (10 pts) Sketch the graph of the square root function. What is the domain of this function?
- (8) (10 pts) Find the  $y$ -intercept(s) (if any) of the graph of the equation  $(x - 1)^2 + y^2 = 1$ .
- (9) (15 pts) Sketch the graph of the function  $f(x) = x^2 - 2$ .
- (10) (15 pts) Are the equations  $y = \sqrt{x}$  and  $x = y^2$  equivalent? Why or why not?