## HOMEWORK 1 - MATH 151 DUE DATE: Monday, January 19 INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. One part of each homework problem will be chosen at random and graded. 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 functions
  - (a)  $f(x) = \sqrt{x^2 2x + 5}$ (b)  $g(x) = \frac{x}{|x|}$ (c)  $h(x) = \frac{1}{1 - \sin x}$
- 2. Find formulas for  $f \circ g$  and state its domain if
  - (a) f(x) = 2x + 1 and  $g(x) = x^2 x$
  - (b)  $f(x) = x^2$  and  $g(x) = \sqrt{1-x}$
- 3. Express f as a composition  $f = g \circ h$  of two functions h and g, if
  - (a)  $f(x) = |x^2 3x + 5|$
  - (b)  $f(x) = \sin^2 x$
  - (c)  $f(x) = \frac{1}{x-3}$
- 4. Classify the following functions as even, odd or neither:
  - (a)  $f(x) = x^2$
  - (b)  $q(x) = x^3$
  - (c) h(x) = |x|
  - (d) k(x) = x + 1
- 5. Determine whether (1,1), (-2,-5) and (0,-1) all lie on a single straight line.
- 6. Find x, y if the line through (0, 0) and (x, y) has slope  $\frac{1}{2}$  and the line through (x, y) and (7, 5) has slope 2.
- 7. Find the equation of the line that is parallel to y = 4x 7 and passes through (1,3). Do the same for the perpendicular to y = 4x 7 that passes through (1,3).
- 8. Sketch the curve given by x = 3t 4 and y = 6t + 2 by eliminating the parameter t and then indicate the direction on the curve of increasing t.