EXAM 1 - MATH 140 DUE 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!!
- 1. Find the center and the radius of the circle that is represented by the equation $2x^2 + 2y^2 + 8x + 6 = 0$.
- 2. Consider the function $f(x) = \frac{x}{x^3 27}$.
 - (a) Find the domain Dom(f) of f.
 - (b) Test f for symmetry with respect to the x-axis, the y-axis and the origin.
- 3. (a) Determine the equation of the line going through the points (-3, -2) and (7, 3).
 - (b) Determine the equation of the line that is parallel to the line in(a) and passes through (2, 4).
- 4. Your brother is to open a tea shop and wants to create a house blend that will sell for \$4.50 per pound by mixing Earl Grey, selling for \$5.00 per pound, and Orange Pekoe, selling for \$3.00 per pound. What percentage of each tea should he blend to obtain the desired mixture?
- 5. Study (find vertex, say whether it opens up or down, find x and yintercepts and roughly sketch the graph) the function

$$f(x) = x^2 - 4x - 12.$$

6. Find the equation of the parabola with vertex at (1,3) that goes through the point (3,-5).