

PRACTICE EXAM 1 - MATH 140

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 $x^2 + y^2 + 6x - 2y - 6 = 0$.
2. Consider the function $f(x) = \frac{-x}{x^2-9}$.
 - (a) Find the domain $\text{Dom}(f)$ 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 $(2, -3)$.
 - (b) Then determine the equation of the line that is perpendicular to the line in (a) and passes through $(4, 6)$.
4. Your uncle is to open a coffee shop and wants to create a house blend that will sell for \$4.00 per pound by mixing two coffees that sell for \$3.00 and \$6.00 per pound respectively. What percentage of each coffee should he blend to obtain the desired mixture?
5. Study (find vertex, say whether it opens up or down, find x and y -intercepts and roughly sketch the graph) the function

$$f(x) = 2x^2 + 5x + 3.$$

6. Beth has 3,000 feet of fencing available to enclose a rectangular field.
 - (a) Express the area A of the rectangle as a function of x , where x is the length of the rectangle.
 - (b) For what x is the area largest?
 - (c) What is the maximum area?