

Econ 30010

## **Intermediate Microeconomic Theory**

### **Math Review**

The basic math skills used in this class include graphing, algebra, differentiation of univariate and multivariate functions, and some integration. This assignment is designed to check your algebra and differentiation skills. Since graphical analysis is a basic high school skill, I will assume you are comfortable graphing functions and interpreting graphs. If this is not the case, please see me as soon as possible and I will work with you in improving these skills. This assignment also does not cover integration. I will review the necessary skills in class when they will be used.

You must complete this assignment by yourself. You may refer to a textbook to remind yourself how to solve each type of problem. You may not use computer or calculator programs to solve these problems. Do the best you can. This is a diagnostic assignment to help me understand the mathematics abilities of each student in the class. You will receive credit for completing this assignment that will not depend on how many questions you answer correctly.

### **Algebra**

1. Solve the following system of equations:

$$-4x + 7y = 14$$

$$2x + 3y = 15$$

2. Solve the following system of equations for  $x$  and  $y$ .

$$a_1 x + b_1 y = c_1$$

$$a_2 x + b_2 y = c_2$$

3. Solve the following equation for  $x$ .

$$6x^2 - 7x + 1 = 0$$

**Differentiation** - For each of these problems calculate the derivative or partial derivative with respect to each of the function's variables.

4.  $f(x) = 10x^4 - 4x^3 + 3x - 5$

5.  $g(y) = 3y^2 - 17y^{1/4} + 2y^{-2}$

6.  $h(x,y) = 15x^2y^{4.5}$

7.  $f(t,w) = 35w^2t - 16t^3 + 8wt - 3$

8.  $g(x,z) = (100 - 3x - 6z)x - 8x^3$

9.  $f(x,y) = \sqrt{10 + xy - x^2 + 3y}$

10.  $f(s,t) = s^{1/3}t^{1/4}$