Wilf Csaplar Jr.   ECON/BUSI 205   Homework #9   **Due Friday 4/27**
The Last One!

Place your name on the back of this sheet of paper and nowhere else. Staple your answers on the front of this sheet of paper. Failure to follow these directions will cost you 10 points. If you use double-sided printing or write on the back of scrap paper, I will give you one additional point.

Seniors taking *comps* will take the exam in the Learning Center on Friday 4/27 at the regular class time. For the review sheet, they should look at the old review sheet and concentrate on Chapters 9.2 - 9.4 and 11.1 - 11.2. They can turn this assignment in at my office. If they turn it in on Wednesday, I will give it back in time for them to study for the exam.

Show all work for all questions which have work.

1) (10 points) Find $\|x-a\|$ where $x = (4, -2, 3)$ and $a = (-1, 2, 6)$

2) (25 points) Suppose the production function is given by $Q = 96K^{1/2}L^{1/3}H^{1/4}$ where H is human capital. Find ∇Q and $\nabla^2 Q$.

3) (5 points) What are the economic interpretations of $\dfrac{\partial Q}{\partial K}$ and $\dfrac{\partial^2 Q}{\partial K \partial L}$? Explain your logic.

4) (25 points) Suppose $F(X, Y, Z) = 4XY^2 + 7X^2Z$. Find ∇F and $H(F)$.

5) (15 points) The production function given in the textbook for my ECON 302 class is $Y = AK^{.3}N^{.7}$ where Y is GDP, A is technology, K is capital, and N is labor. Prove that this production function has both diminishing productivity of labor and diminishing productivity of capital.

6) (20 points) Find ∇U and $\nabla^2 U$ for the following. $U(\text{Clothing, Food, Music}) = C^{1/2} + F^{1/3} + M^{2/3}$