

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 print on the back of scrap paper, I will give you one additional point.

1) (10 points) Which part of my web page, <http://www.WCsaplarJr.info> do you think will be most helpful? Why? Is anything missing that you would like to see? What is the URL for the first exam from this class during the last semester it was taught? If you were a Managerial Economics major, then which courses would you be taking *comps* in on Tuesday Morning? According to the boxes in yellow on my main page, which of the 25 most requested skills on LinkedIn are taught to our Economics majors?

2) (15 points) If $F(X, Y, Z) = 4X^2Y^3 + XYZ + Y^4 + \ln(4X)$, then calculate all three first derivatives and all nine second derivatives. Show all work.

3) (25 points) Suppose your utility function was $U(T, H) = T^2H$. Your income is \$360. Textbooks (T) cost \$12 each (don't you wish) and hats (H) cost \$24. Set up the Lagrangian and briefly explain how you found it. Calculate how many textbooks and hats would maximize your utility. Calculate your utility. **Estimate** how much your utility would go up if your income went up \$3. Show all work for all parts of your answer.

4) (25 points) If $U(C, D) = 4C^{1/4}D^{1/2}$, your income is \$384, the price of a cat is \$8/cat, and the price of a dog is \$1/dog, then set up the Lagrangian and briefly explain how you found it. Calculate how many cats and dogs would maximize your utility. Show all work. (I can't imagine wanting that many cats and dogs.)

5) (25 points) If your utility function is $U(E, F) = 12E^{1/3}F^{1/2}$. Suppose the budget constraint is $300 = 2E + 3F$. Set up the Lagrangian and briefly explain how you found it. Calculate the utility maximizing consumption of eggs, and figs. Calculate your utility. Show all work for all parts of your answer.