Wilf Csaplar Jr.   Economics 477   Homework #2   Due **Tuesday 9/8**

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 1 point. If you use double-sided printing or print on the back of scrap paper, I will give you one additional point.

Show all work on all questions.

1) (10 points each) For each of the following, determine if it is a valid utility function. If you do the "returns to scale" test, do the formal test – not the quick test.
A) $U(A, B) = 2AB^3$
B) $U(C. D) = 4C^{3/4}D^{3/4}$
C) $U(E, F) = 3E^{1/2} + 3F^{1/2}$
E) $U(G, H) = \ln(7G*H)$ Do not worry about the "returns to scale" test.

2) (10 points) For utility function $U(J, K) = 6J^{1/3}K^{1/2}$, what transformation, $F(U)$, would you do to make the problem easier to deal with? Prove that $F(U)$ is a valid transformation and find $F(U)$.

3) (20 points) Suppose your utility function is $U(B, H, C) = 6B^{1/3}H^{1/2}C^{1/2}$. The price of a bat is $18/bat. The price for a hat it is $12/hat and the price of a coat is $12/coat. Your income is $10800. If you spent all of your income on bats and hats, then what is the utility maximizing quantity of each? Show all work.

4) (20 points) Suppose your production function is given by $Q = 4K^{1/2}L^{1/4}$. Labor costs $10/hour while capital costs $5/hour. Find the cost minimizing capital and labor if you want to produce 216 items. Approximately how much more would it cost you if you wanted to produce 2 more?. Show all work.