Wilf Csaplar Jr.   Business 205   Homework #2   **Due Friday 2/8**

Place your name on the back of this sheet of paper and nowhere else. Staple your answers face up 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.

Using graph paper is recommended but not required.

1) (15 points) The book draws $Y = aX^b$ for values of b except for $b \in [-1,1]$. Draw $Y = X^{1/2}$ for $X \in \Re_+$. Is the graph both "one-to-one" and "onto"? Explain your logic. Does it have an inverse? Explain your logic.

2) (20 points) Draw the graph for $Y = 6 - (1/9)X^3$ for $X \in \Re_+$. Plot the points for $X = 0, 1, \& 3$. Is this convex, strictly convex, concave, strictly concave, or none of the above? Explain your logic.

3) (20 points each) Plot each of these sequences. Determine if they are convergent or divergent. <u>If they are convergent</u>, what is the limit? Briefly explain your logic. <u>If they are divergent</u>, are they bounded or unbounded? Briefly explain your logic.
A) $f(n) = 12/n$
B) $f(n) = (-2)^n$

4) (15 points) Suppose the utility of hats and coats is given by $U = H^{1/2}C^{1/2}$. Plot one indifference curve. Show all work as to how you got the point and briefly explain what you did. Given your graph, is that utility function quasiconcave, quasiconvex, or neither? Explain your logic. What is the name of this type of utility function?

5) (10 points) If the interest rate is 5%, then how much money would you need to save now if you wanted $1,000,000 in 40 years and interest was compounded annually? What if it was compounded monthly? Show all work and briefly explain what you did.