Wilf Csaplar Jr. ECON/BUSI 205 Homework #2 **Due Tuesday 2/9**

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 calculations and all work on all questions.

1) (10 points each) For of the following, draw the function. Determine if it is one-to-one and/or onto. Briefly state how you determined whether or not it is one-to-one and onto. Draw them in the first quadrant only, except for Part C. Draw Part C for all $x \in (-\infty,\infty)$. For all parts, it may be helpful to draw a few points and know what the general shape of that type of function is.
A) $F(x) = x^{1/2}$
B) $F(x) = \log_2(x)$
C) $F(x) = 3(x-2)^2$

2) (5 points each) For each of your answers to Question #1, determine if the function is concave, strictly concave, convex, strictly convex, or none of the above. State how you reached your conclusions.

3) (20 points) Draw one of the level curves for the utility function U(Hats, Coats) = 2HC. State how you found it. Is the function strictly quasiconcave, quasiconcave, quasiconvex, strictly quasiconvex, or none of the above. Explain your logic.

4) (5 points) Find the Euclidean distance between (4, 6, -2) and (-1, 6, 10).

5) (10 points each) For each of these sequences, determine if it is convergent, divergent, or definitely divergent. Determine whether it is bound or not. State your logic and state the first four terms.
A) $a_n = 12/n$
B) $a_n = (-2)^n$
C) $a_n = -3*(-1)^n$