Wilf Csaplar Jr. Business 205 Homework #1 **Due Thursday 2/6**

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.

1) (10 points each) Draw each of the following. Is the set, open, closed, partly open and partly closed, bounded, and/or unbounded? Briefly state how you reach that conclusion.
A) $x \in (-\infty, 5]$
B) $-3 \leq x \leq 8$
C) $4 \leq x < 9$

2) (5 points) What is the distance between (4, -2, 5, -4) and (-1, -3, 8, -5)? Show all work.

3) (5 points each) Determine whether each of these sets is a convex set, strictly convex set, or neither. State your logic.
A) ♣
B) ◗
C) ●

4) (20 points) Draw two level curves for the utility function U(W, B) = W*B where W is waffles and B is bacon. (Technically, this is not a valid utility function, but the valid ones would be too difficult.) Is the function strictly quasi-concave, quasi-concave, quasi-convex, strictly quasi-convex, or none of the above? Explain your logic.

5) (10 points each) For each of these sequences, plot the first 6 terms of it. Determine if it is convergent or divergent. Briefly explain your logic.
A) $f(n) = 120/n$
B) $f(n) = n$
C) $f(n) = 4(-1)^n$