Wilf Csaplar Jr.   ECON/BUSI 205   Homework #2   **Due Monday 2/13**

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

1) (20 points each) Plot each of these lines by finding key points. State how you found them. Is the function invertable? I.e., does F^{-1} exist? If no, prove it. If yes, then find it showing all work. Determine if it is a strictly convex function, convex function, concave function, strictly concave function, or none of the above. Explain your logic.
A) $Y = F(X) = -2X^2 + 4X + 3$
B) $Y = F(X) = 2X^{1/2}$

2) (15 points each) For each of the following sequences, plot the first 5 terms and determine if it is convergent, divergent, or definitely divergent. Explain your logic.
A) $F(n) = 12*(-1)^n/n$ $n \in \mathbf{Z}_+$
B) $F(n) = 2n$ $n \in \mathbf{Z}_+$

3) (10 points each) For each of the following, set up the present value calculation. Explain how you decided what numbers go where. There is no need to do the calculation.
A) You put $1000 in the bank earning an APR of 6% with interest compounded monthly. How much will you have in the bank in 5 ½ years?
B) A bond has a face value of $2000, a coupon rate of 6% with interest paid quarterly, and a maturity date of 3 years and 3 months from now. You desire an annual return of 4%. How much would you be willing to pay to buy it?
C) Suppose Bethany College cost you $30,000 a year for four years. Ignore the fact that it changes every year and assume you pay half of it each semester. If you worked right out of high school, you could make $20,000/year. For ease, assume you would have gotten two paychecks a year. (That is to make the equations easier, not for realism.) After graduation, you could earn $15,000 a year more than you would have earned if you did not have an education. You will work for 45 years after graduation. You want to know what your effective rate of return is.