Wilf Csaplar Jr.   Business 205   Homework #6   **Due Thursday 3/13**

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.

Show all work for all questions.

1) (20 points) Find the global maximum and minimum of $\frac{1}{3}X^3 - 6.5X^2 + 22X + 10$ over the interval [1, 10].

2) (25 points) Suppose the inverse demand curve is given by $P(Q) = 74 - 2Q$ and the total costs is $Q^2 + 2Q + 10$. Find the profit function $\Pi(Q)$. Find the profit-maximizing quantity. Suppose there was a limit on production where the maximum $Q = L = 10$. What is the profit-maximizing output? How much are the profits there? What is the shadow price of the constraint? Using the shadow price, approximately how much would the profits increase if the limit was increased by 2? How can you tell?

3) (25 points) Suppose the demand curve is given by $Q(P) = 19 - P$. The total cost function is given by $C(Q) = 3Q + 2$. Write the profit function as a function of P. If there were no constraints, what would be the profit-maximizing price for the monopoly to charge? If there was a price ceiling of $P = 7$, then what is the profit maximizing price?   How much are the profits there? What is the shadow price of the constraint? Using the shadow price, approximately how much would the profits increase if the ceiling was increased by 2? How can you tell?

4) (10 points) Solve the demand and supply equilibrium by graphing. The inverse demand curve is $P(Q) = 20 - \frac{1}{2}Q$. The inverse supply curve is given by $P(Q) = 4 + Q$.

5) (10 points) Solve the IS/LM equations using the substitution method. The IS curve is given by $r = 10 - .01Y$ and the LM curve is given by $r = 4 + .02Y$.

6) (10 points) Solve the supply and demand system using the elimination method. The supply curve is given by $10P - Q = 11$ and the demand curve is given by $4P + 2Q = 26$.