Econ 6401 – Fall 2006 Name_____
Final Exam – Dr. Rupp
$E_P = \partial Q/\partial P * P/Q$ Pledge (sign)_____
$MR = P(1 + 1/E_p)$ "I have neither given nor received assistance on this exam"

1. (8 pts) A perfectly competitive firm has a short-run production function given by: $Q = 10\sqrt{L}$. The price of the final product is $4 and the wage rate is $2. How much labor will the firm use?

2. Given the inverse demand for widgets is: $P = 120 – 2Q$ and the price of widgets is $20.
   a. (6 pts) Calculate the price elasticity of demand for widgets

   b. (6 pts) Briefly explain what this elasticity number means.

   c. (3 pts) What can the widget manufacturers do to increase revenues?

3. For the production function: $Q = 3K^{0.5}L^{0.5}$
    a. (10 pts) Find the conditional input demand functions K*(Q,r,w) and L*(Q,r,w)

    b. (5 pts) With w = \$9 and r = \$4, find the cost-minimizing input combination of L and K to produce 36 units of output.

4. (7 pts) A firm that produces a product with two inputs (K and L) is operating with marginal products: $MP_K = 4$ and $MP_L = 2$. The prices per unit of capital and labor are, respectively $r = 2$ and $w = 4$. Is this firm operating efficiently? If not, what would you advise the firm to do?

5. For the demand curve: $Q = 50 - \frac{1}{2} P$ and $MC = Q$.

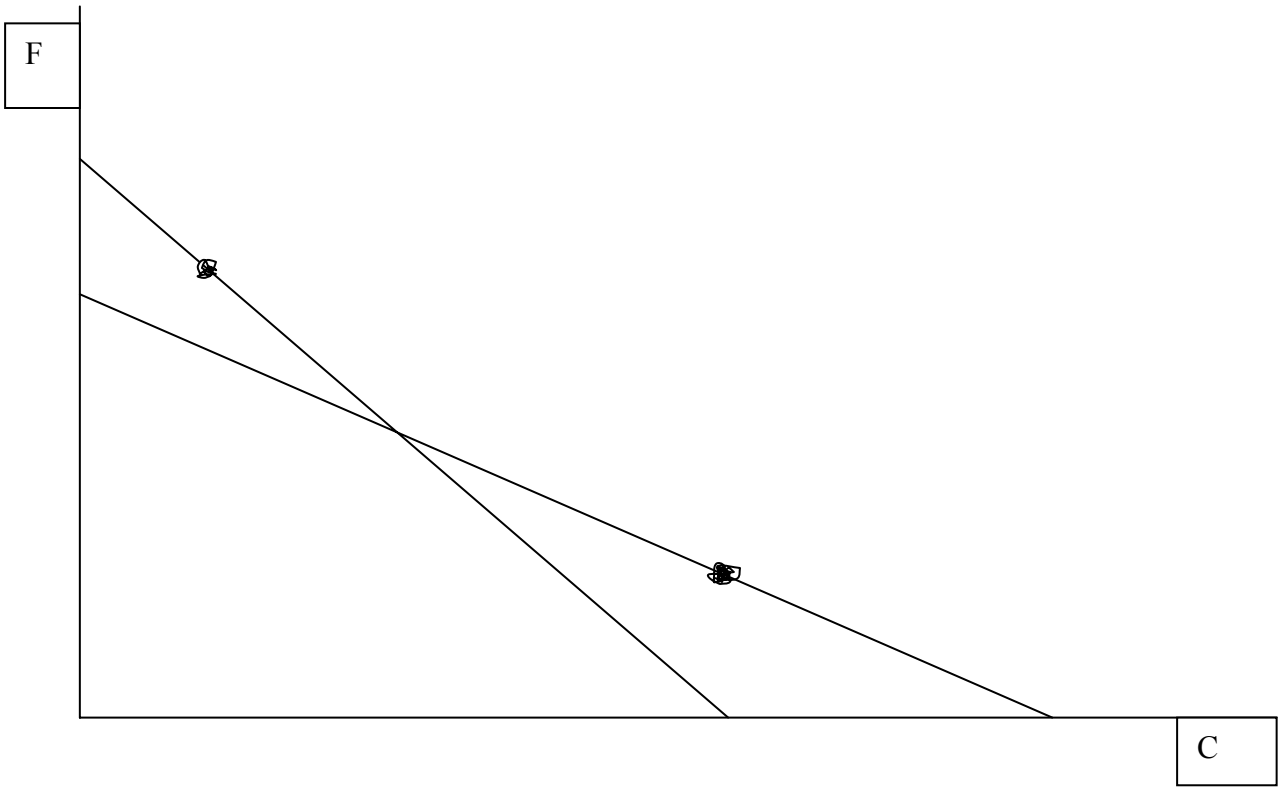
   a. (5 pts) Find the monopolist price and quantity.

   b. (6 pts) On a graph illustrate the consumer surplus, producer surplus and deadweight loss areas.

   c. (4 pts) Calculate the deadweight loss for the monopolist.

6. (10 pts) Joe has a utility function: $U = X^{.25}Y^{.75}$ and the price of good X and Y are: $P_X = \$1$ and $P_Y = \$2$ and income = \$100. Find the X and Y that maximize utility for Joe.

7. Shown in the figure below is a consumer who buys two goods food (F) and clothing (C). She likes both goods. When her budget line is BL_1 her optimal bundle is A; when her budget line is BL_2 her optimal bundle is B.



a. (5 pts) What can you infer about how the consumer ranks baskets A and B? If you can infer a ranking, explain how. If you cannot infer a ranking, explain why not.

b. (5 pts) On the graph above, shade in (and clearly label) the areas that are revealed to be less preferred to bundle B.

8. Jackson has utility function: $U = 2X^{0.5}Y^{0.5}$ with P_x and P_y indicating the price of X and Y, respectively and M indicating income.

   a. (6 pts) Derive the generalized demand functions for $X^*(P_x,P_y,M)$ and $Y^*(P_x,P_y,M)$.

   b. (4 pts) Derive the expenditure function $M(P_x,P_y,U)$

c. (6 pts) Assume initially that M = \$100, P_x = \$2 and P_y = \$2. Calculate the change in consumer welfare using the equivalent variation measure when the P_x falls to \$1.

d. (4 pts) In words, what does this equivalent variation measure that you calculated mean?