

Do not put your name anywhere on the assignment, other than on the back of this sheet of paper. Staple your answers on the front of this sheet of paper. Failure to follow these directions will cost you 1 point. Your assignment will be typed, except graphs can be drawn by hand and mathematical equations can be done by hand. Failure to type it will cost you 10 points. If you do double-sided printing or print on the back of scrap paper, I will give you one additional point.

- 1) (20 points) Suppose the firm has a production function of $Q = K^{1/3}L^{1/3}$. If the wage rate is \$4/L and the rental rate is \$1/K, then what are the total cost, marginal cost, and average total cost functions? Show all work.
- 2) (20 points) Suppose the firm has a production function of $Q = K^{1/2}L^{1/4}$. If the wage rate is \$12/L and the rental rate is \$3/K, then what are the total cost, marginal cost, and average total cost functions? Show all work.
- 3) (30 points) Suppose the industry demand curve is given by $P = 19 - (Q_1 + Q_2)$. If the total cost function for firm i is given by $TC_i = Q_i^2 - Q_i + 5$, then what is Firm 1's Cournot style best response function? Find the Cournot equilibrium values for Q_1 , P , and Π_1 . Find the Von Stackleberg equilibrium values for Q_1 , Q_2 , and P . Show all work.
- 4) (30 points) Suppose the industry demand curve is given by $P = 50 - 2(Q_1 + Q_2)$. If the total cost function for firm i is given by $TC_i = 3Q_i^2 + Q_i + 15$, then what is Firm 1's Cournot style best response function? Find the Cournot equilibrium values for Q_1 , P , and Π_1 . Find the Von Stackleberg equilibrium values for Q_1 , Q_2 , and P . Show all work.