

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 10 points. If you use double-sided printing or print on the back of scrap paper, I will give you one additional point.

Show all work and briefly explain all answers.

1) (20 points) Suppose a production function is given by $Q(K, L) = 6K^{1/3}L^{1/2}$. The wage rate is \$9/hr and the price of capital is \$6/hr. Find the cost minimizing total cost function. Use that to find the average cost function and the marginal cost function. Prove that λ is the marginal cost function.

2) (20 points) Suppose a production function is given by $Q(K, L) = 6K^{1/4}L^{1/2}$. The wage rate is \$9/hr and the price of capital is \$18/hr. Find the cost minimizing total cost function. Use that to find the average cost function and the marginal cost function. Do not worry about λ .

3) Suppose the industry demand is given by $P = 130 - 2(Q_1 + Q_2)$ and firm i 's cost curve is given by $TC_i = 20 + 10Q_i + 3Q_i^2$.

A) (15 points) Find the two firms' Cournot outputs, price and profits.

B) (15 points) Find the two firms' Von Stackelberg outputs, price and profits.

4) Suppose the industry demand is given by $P = 150 - 1(Q_1 + Q_2)$ and firm i 's cost curve is given by $TC_i = 20 + 39Q_i + 4Q_i^2$.

A) (15 points) Find the two firms' Cournot outputs, price and profits.

B) (15 points) Find the two firms' Von Stackelberg outputs, price and profits.