

Do not write your name on the assignment. Write your name only on the back of this sheet of paper and staple your answers on the front of this sheet of paper. Failure to follow these directions will cost you 1 point on the assignment.

1A) (30 points) Find the total cost, average cost, and marginal cost functions for a firm with a production function of $Q = K^{1/2} + 2L^{1/2}$, a rental rate of $\$4/K$, and a wage rate of $\$2/L$. Show all work and make sure I can follow your work.

1B) (10 points) In the cost minimization from part A, solve for λ . Show all work. How does this compare to the marginal cost curve in part A? Why is that true?

2A) (30 points) Find the total cost, average cost, and marginal cost functions for a firm with a production function of $Q = K^{1/3}L^{2/3}$, a wage rate of $\$1/L$, and a rental rate of $\$4/K$. Show all work and make sure I can follow it.

2B) (5 points) Is K greater, less than, or equal to L ? What is the economic reason for that? Note that there are two reasons.

3) (25 points) Suppose that your production function was given by $Q = K^{1/4}L^{1/2}$, the rental rate of capital is $\$4/K$, and the wage rate is $\$3/K$. If you wanted to produce as much as you could, but only had $\$144$, then how much can you produce. Show all work and make sure that I can follow it. (Even though the values of K and L are integers, do not worry that Q is not.)