

ECO 610  
 Fall 2017  
 Problem Set #4

1. (6 pts.) Labor and capital are used to produce widgets according to the production table below:

		Labor Input				
		L=1	2	3	4	5
Capital Input	K=1	Q=20	40	55	65	75
	2	40	60	75	85	90
	3	55	75	90	100	105
	4	65	85	100	110	115
	5	75	90	105	115	120

Per unit-prices for labor and capital are  $w = \$40$  and  $v = \$40$ . For this particular production function, when both input prices are the same, the long-run least-cost combination of inputs occurs where  $K = L$ . Using this information, graph five points on this firm's long-run average cost curve in the attached diagram. Be sure to point out if there are economies or diseconomies of scale, and indicate the minimum efficient scale of production.

2. (4 pts.) Suppose you have chosen  $K = 3$  and are stuck with that plant size in making short-run production decisions. If you want to produce  $Q = 55$ , how would you do it and what would your per-unit costs be? If you wanted to produce  $Q = 105$ , how would you do it and what would your per-unit costs be? Graph these two points on the firm's short-run average total cost curve for plant size  $K = 3$ . Hint: there is a third point on this SRATC curve that you have already calculated from above. Make sure your SRATC curve reflects this.

$(\$/Q)$  ATC

