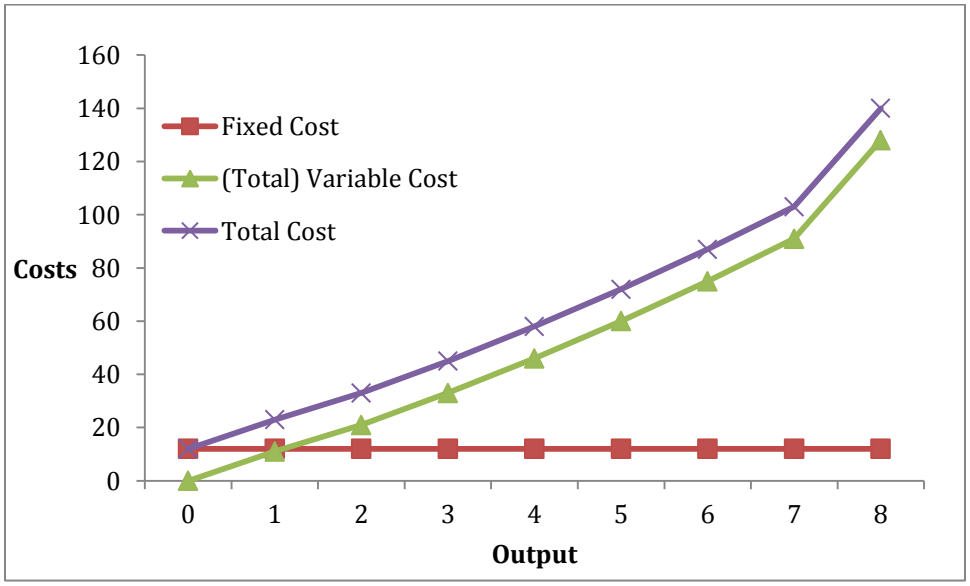
Prof. John McPeak
PPA 723
Fall 2011
Problem Set 6 Solution Set

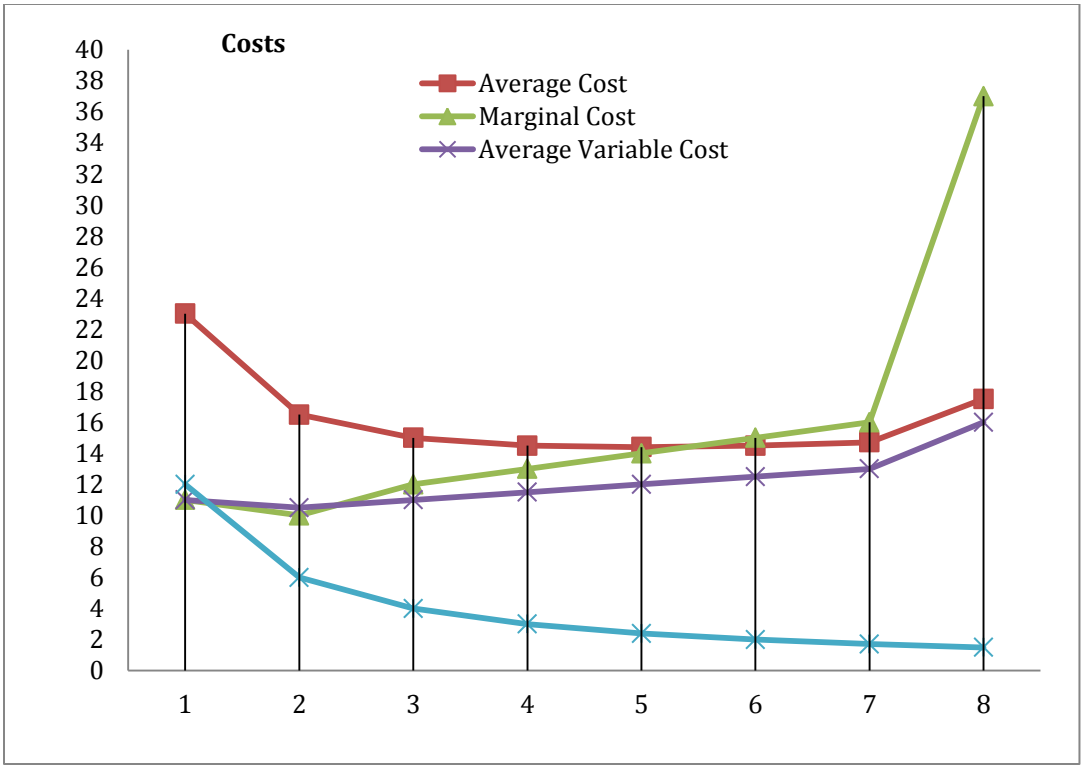
Answer 1:

Output	Fixed Cost	Total Cost	Average Cost	Marginal Cost	(Total) Variable Cost	Average Variable Cost	Average Fixed Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		TC=TFC+TVC **or** AC*Q **or** TC_{-1}+MC	AC=TC/Q	MC=TC-TC_{-1}	TVC=TC-FC	AVC=TVC/Q	AFC=FC/Q
0	**12**	**12**	**NA**	**NA**	**NA**	**NA**	**NA**
1	12	23	23.0	**11**	11	11	12
2	12	**33**	16.5	10	21	10.5	6
3	12	45	**15.0**	12	33	11	4
4	12	**58**	14.5	13	46	11.5	3
5	12	72	14.4	14	**60**	12	2.4
6	12	**87**	14.5	15	75	12.5	2
7	12	**103**	14.7	16	91	13	1.7
8	12	140	17.5	**37**	128	16	1.5

a) Short Run on cost because there is a fixed cost
b) Profit Maximization condition in SR is P=MC .If P=14, then Q=5 where MC=P=14.
c)



d)

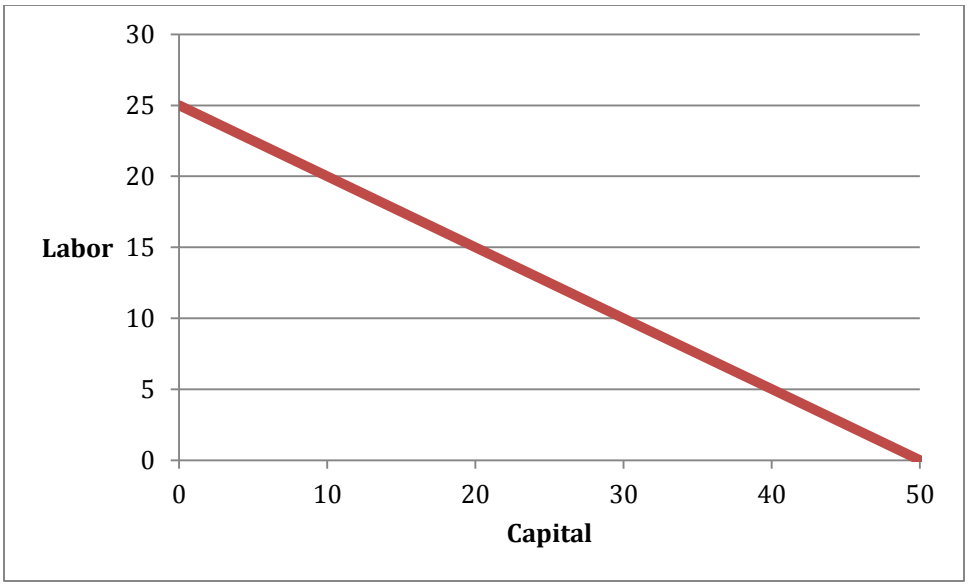


AC= AVC+AFC
AFC is continuously falls with increase in Q
AC,AVC and MC are U-shaped curves increasing, constant and diminishing returns to product.
Marginal Cost cuts AVC and AC curve at their minimum from below

Ques2:
Fixed cost- the production expenses of the firm that do not vary with output. Costs of inputs the firm cannot feasibly vary in the short term.
Variable cost- production expenses that change with the quantity of output produced.
Total Cost: Total cost is variable cost plus fixed cost. TC=VC+FC
Average Cost: Total cost per unit of output. (TC)/q is average cost
Average Fixed Cost: Total Fixed cost per unit of output. FC/Q
Average Variable Cost: Total Variable cost per unit of output. TVC/Q
Marginal Costs: Addition to the total cost by producing one more unit of output. MC

In the long run: Since there are no fixed inputs, all costs are variable costs, TC=TVC, hence we only have total (variable) cost, average cost and marginal costs

Ques 3
a) 2K+4L= 100



b) $MRTS_{LK}$ = -w/r= -2

c) Use equi-marginal rule. $MP_L/W = MP_K/R$

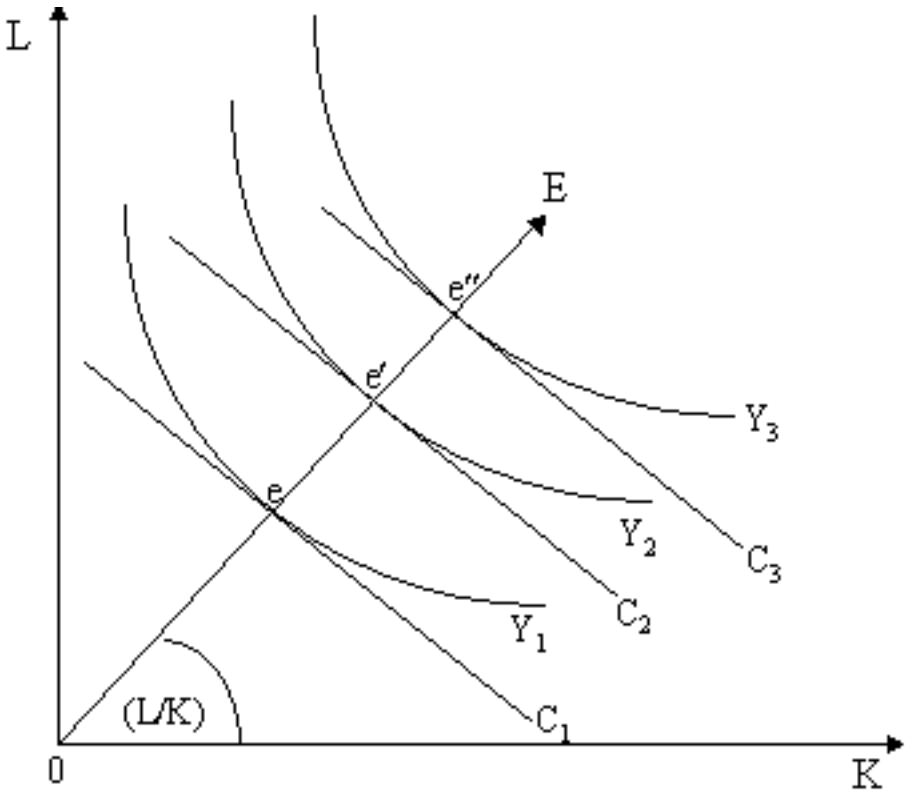
MP_K= (4/4)*2=2

Ques 4 Variable Costs= 5.000 per day
Fixed costs = 120,000
Number of days worked 30

Shut down point is when P=MC <AVC in the short run
P<AVC
Or P*Q<AVC*Q
TR<TVC
Thus if the revenue is less than 5,000 per day, the firm should shut down the production

Ques5. Expansion Path: The expansion path traces out the cost minimizing combination of inputs for each output level. If we look at the line traced out by the tangency points, we trace out a line of economic efficiency.

Ques 5b(refer to class notes lecture 8)



source: http://www.newschool.edu/nssr/het/essays/product/cost.htm

5c. All points on expansion path are technically efficient as they lie on isoquants and economically efficient as they lie on the isocost lines.

5d. All points on expansion path are potentially profit maximizing points subject to the respective input prices, total cost and production function for that input combination. To choose a specific profit maximizing quantity we need to know the selling price of the good we have produced. Since we don't know that from the information on the expansion path we are not able to identify the profit max. point.

Ques 6

a) NNS

If it is technologically efficient it is a necessary but not sufficient for it to be economically efficient. There is no way to be econ. efficient without being tech. efficient first.

b) S,NN (all points on expansion path lie on the isocost line, but so do other economically efficient bundles)

c) N,S if MC>AC then AC must be rising

d) N,NS For Felix to be a cat, he must hate baths, but he could be a small boy who hates baths.

e) N,S If the firm is experiencing increasing returns to scale, then its output more than doubles when its input doubles

f) S,NN if there is more than one section this semester. If you are in this class, you are taking PPA 723 this semester. However you could be taking PPA 723 but in another section so not in this class. If this is a semester when there is only one section and this is it, then it becomes N,S.