1. (2 Points) There are six strategic dimensions along which the companies can distinguish themselves. List these six dimensions and find out which dimension Dell Computers (http://www.dell.com/) mainly make use of to distinguish itself from its competitors in the USA. (Hint: Consider in which section of the supply chain customers are involved in Dell).

2. (9 Points) Vestel, a large company that runs business in a variety of areas has just decided to get involved in AC production. However the AC production requires a part that Vestel does not currently produce in-house. Hence, management needs to decide between manufacturing and outsourcing this part. It has been estimated that the manufacturing option will require purchasing new equipment, which costs $320,000, and hiring trained personnel with labor costs of about $60 per unit produced. The candidate company for the outsourcing option requests an initial contract price and $70 per unit afterwards. The manufacturer has estimated to sell 10,000 units within a year given its competitor’s sales figures.

a) What is the initial contract price that will make Vestel indifferent between outsourcing and manufacturing in-house?

b) If the initial contract price is $180,000, what is the appropriate decision for Vestel?

c) Based on a recent forecast estimate, Vestel management found out that the sales will probably exceed 10,000 units for the following year. What is the break-even quantity when the contract price is as in part b?

3. (4 Points) A new bank clerk needed an hour to encode his first set of checks, 45 minutes for the 10th set of checks. Based on the labor hours required for the first and the 10th set of checks, and using the relationship Y(x) = ax^b for the x-th set of checks,

a) Calculate the learning rate (L) of the clerk.

b) When will he be able to work at the (approximately) standard rate of 2 checks per hour?

4. (10 Points) Vestel Company in question 1 decided to manufacture the parts in-house. Management kept track of the production times in order to understand the improvement in the workers’ productivity over time. The following table shows the data collected by the company:
a) Plot the cumulative number of units produced (x-axis) versus the hours required for next unit.

b) Plot the natural logarithm (ln) of the cumulative number of units produced versus natural logarithm of the hours required for next unit.

c) Approximately fit a straight line to the plot in part (b). Based on this fit, estimate the time required to produce the first unit and the appropriate percentage learning curve that fits the data.

d) Using the relations \( Y(x) \) you found in part (c) estimate the production the unit that will be produced in 2.9 hours?