Youngberg

Econ 301—Bethany College

**Homework 06**

Answer all the following on a ***typed, stapled*** (if applicable)separate sheet of paper. You do not need to type equations and graphs. I charge 25 cents to staple your homework. Make sure that you justify your answers, use your own words, and show your work. All questions are equally weighted.

1. Calculate the elasticity of scale using the following information. Use the equation as described in II.d. of Lecture 16 (as in, use the MC/AC equation as written; don’t take any averages). Using the starting costs and quantity as C and Q, respectively. Indicate if the firm is experiencing economies or diseconomies of scale.
   1. Starting at a cost of $10 and quantity of 50, increase quantity by 25 which cost an additional $1.
   2. Starting at a cost of $100 and a quantity of 20, increase quantity by 1 which costs an additional $5.
   3. A cost of $16 produces a quantity of 10. At this point, the marginal cost of production is $32.
   4. When the average costs are $40, increase production by 100 which costs an additional $10.
2. Last year the CEO of Netflix, Reed Hastings, believed that two companies would collectively be more productive than one company and proposed to separate its DVD-by-mail service from its streaming media service. Sketch two product transformation curves showing “DVDs by mail” on one axis and “Streaming” on the other axis. Depict one curve as if Hastings was correct and the other curve as if it he is incorrect (which he probably is since Netflix backtracked on its change).
3. Suppose the price of labor (w) is $5, the rental rate of capital (r) is $10, and the production function is 2K0.7L0.3. Using the cost minimization method, find out how many capital and labor you must rent/hire if you want to make 100 units. Remember to show your work, deriving each step of the Lagrangian.
4. Check your work in number 3 using the general form of the solution of the Cobb-Douglas production function we derived in class. Describe the returns to scale of this function.
5. As much fun as it is determining optimal bundles of production, F.A. Hayek would probably disagree with our emphasis on Lagrangians. ***Briefly*** summarize one of Hayek’s criticisms from the *Use of Knowledge in Society*.