**Technology and Economics**

**Quiz 1**

1) When Gutenberg invented the printing press in 1439, one calligrapher could write 30 pages by hand in one day. Gutenberg’s machine could print 1000 pages per day. Let denote the total number of printed pages, and let and be number of printing presses and calligraphers. Express the printing technology (the relation between output and inputs and ) in 1439 in mathematical terms.

2) To produce a pair of eye glasses, one frame and two glasses are used. If denotes the total number of eye-glasses, what is the mathematical relation between output and inputs and .

3) Suppose that the production technology is Cobb-Douglas:

a) Compute

b) Compute

4) Determine the returns to scale for the following technology:

5) Determine the returns to scale for the following technology:

6) As an economic consultant,you visit a production plant (a factory). During your visit, you explain the concept of returns to scale to the manager of the factory. The manager responds as follows:

“If we would double all our input then our production would also be doubled. But our revenues would not be doubled. That is because, doubling output would require decreasing our price to sell all these extra products. So our technology has decreasing returns to scale.”

1. Why is the manager wrong?
2. What is the actual returns to scale in this production facility?