

*NB. X.Y refers to Chapter X, Problem Y exercise found at the end of the relevant chapter under the heading “Problems and Applications”*

**Problem Set 1.**

**Due Date: End of Lecture on Wednesday September 21**

1.3; 2.6; 2.7; 2.9

**Additional Exercises**

Define the production function as:  $F(K, L) = AK^\alpha L^\beta$ , where  $A$  is a measure of productivity,  $K$  is total capital stock of the economy and  $L$  is the total available labor in the economy.

- i) Find the marginal product of capital.
- ii) Find the marginal product of labor.
- iii) Show that if  $\alpha + \beta > 1$ , then the function is increasing returns to scale.
- iv) Show that if  $\alpha + \beta < 1$ , then the function is decreasing returns to scale.
- v) Show that if  $\alpha + \beta = 1$ , then the function is constant returns to scale.
- vi) Transform the current production function that relates levels of productivity, capital, and labor into one that relates growth rates of productivity, capital, and labor.