1. a) Using the expression $z = x \cdot y$, illustrate the product rule. Show that the growth rate of z is the sum of the growth rates of x and y.

   b) If $z = \left(\frac{x}{u \cdot v}\right)$, what would the growth rate of z be in terms of the growth rate of x, u and v?

2. Derive the demand for labour and capital for the Cobb-Douglas production function $Y = K^{\alpha}(AL)^{1-\alpha}$. Show how the demand is influenced by the parameter A, explaining your answer.

3. Now suppose that the supply of labour and capital to the economy is fixed. How does A influence the factor rewards? How does your answer change if the supply of capital is infinitely elastic because of international capital mobility?