

EC202 Hand-in Work

2017-18

Guidelines

- In weeks 2, 3, 5, 7, 9, 11 there are assignments for you to hand in.
- These are not optional: they form part of your formative coursework. Grades will be recorded by your class teacher.
- The hand-ins are to be *your own work* only: don't prepare them with classmates or friends.
- Make sure you get the work to your class teacher on time.

EC202, 2017-18. Hand-in work, week 2

Suppose the production function for a single-output firm is $\left[\frac{1}{2}z_1^\beta + \frac{1}{2}z_2^\beta\right]^{\frac{1}{\beta}}$ where z_i is the quantity of input i and β is a parameter that may take any value from $-\infty$ to 1.

1. Find the equation for the isoquants. Do the isoquants touch the axes? Explain.
2. Let m be the marginal rate of technical substitution $-\frac{dz_2}{dz_1}$ and r be the input ratio $\frac{z_2}{z_1}$. Find m as a function of r .
3. Show that the elasticity of r with respect to m is $\sigma = \frac{1}{1-\beta}$.
4. Suppose instead that the production function is $\sqrt{z_1 z_2}$. What would be the answer to questions 1 and 2 in this case? What would be the elasticity of r with respect to m in this case?
5. In the light of your answers to questions 3 and 4, suggest how the two production functions are related.