

ECON 4120: Mathematics 2

Fall semester 2013

Seminar 1, week 36

All problems are taken from the exam problem collection, except the last which is just quoted below.

Notice that "sketch" a graph means "sketch": get the qualitative properties visible, not get it pretty. Don't spend too much time on this.

Exercise problems:

- From the compendium: 15, 18, 32 except part (c), 115 except (c), 117.

- One more:

Let $F(x, y) = x \exp(y)$ be a production function defined for nonnegative x, y . Consider a level curve $F(x, y) = C$, $C > 0$, on which y is a function of x .

Then y can be solved explicitly as $y = \ln C - \ln x$. But in problems 1. - 3. you are asked to NOT solve this way, but use the **implicit calculations rules**:

1. Compute the $MRS = -dy/dx$ on this level curve using implicit differentiation.
2. Compute the elasticity of y wrt. x
3. Compute the elasticity of substitution of F by using the formula in the book.
4. Verify your answers in 1. - 3. by calculating in a different manner (in 1., 2. use the form $y = \ln C - \ln x$, while in 3. calculate the ratio $d \ln(y/x) / d \ln MRS$).