

ECON3120/4120 – Mathematics 2, fall term 07: **Problems for seminar 3, Sep. 24**

This is the same problem set that was originally given – by mistake – for Sep. 17. We are now lagging a bit relative to the lectures.

- 1 Ma I: 10.1.2 (c) and (e). (EMEA: 9.1.4 (c) and (e).)
- 2 Ma I: 10.6.1 (d). (EMEA: 9.5.1 (d).)
- 3 Ma I: 10.7.2 (c). (EMEA: 9.6.2 (c).)
- 4 Problem 63 in the Exam problem booklet.
- 5 Consider the function f defined by

$$f(x) = x(\ln x)^2, \quad x > 0$$

- (a) Compute $f'(x)$ and $f''(x)$.
- (b) Decide where f is increasing and where f is decreasing. Does f have global extreme points?
- (c) Find $\int x(\ln x)^2 dx$.

Comments: 1, 2, 4(a) and 5 should be relatively straightforward. In 3 you should be bold in choosing a new variable. In the last question in 63(a) you are actually asked about finding the tangent to the curve at $(1, 0)$. 63(b) is important. Start by taking total differentials of each equation. The last part of 63(c) is tricky.