

**EBA1180 Mathematics for Business Analytics**  
**autumn 2024**  
**Exercises**

*I came to the position that mathematical analysis is not one of the many ways of doing economic theory: it is the only way.*

R. Lucas

**Lecture 21 – 22**  
**Sec. 7.12, 6.4, 9.3, 9.5:**  
**l'Hôpital's rule. Marginal revenue and cost.**

Here are recommended exercises from the textbook [SHSC].

Section 7.12 exercise 1-3, 4a, 5

Section 6.4 exercise 2, 6

Section 9.5 exercise 1-4

**Problem** (Multiple choice exam 2018a, problem 14)

We have a curve implicitly defined by the equation  $4x^2 - 7xy + 4y^2 = 16$ .

Which statement is correct?

- (A) There is only one point on the curve with  $x$ -coordinate 4 and the slope of the tangent at this point is equal to  $-1$
- (B) There are two points on the curve with  $x$ -coordinate 4 and the product of the slopes of the tangents at these points is  $-2,75$
- (C) There are two points on the curve with  $x$ -coordinate 4 and the product of the slopes of the tangents at these points is  $-64$
- (D) There are two points on the curve with  $x$ -coordinate 4 and the product of the slopes of the tangents at these points is  $\frac{1024}{425}$
- (E) I choose not to answer this problem.

## Answers

**Problem** (Multiple choice exam 2018a, problem 14)

B