Mathematical Foundations of Economy 2012.12.11.
VEMIMAB144M-31

1) Calculate the next limit

$$\lim_{x\to\infty} \frac{x^2+2}{(\ln^2 x)+x}$$

(10p)

2) Make the discussion of function $f(x) = x^3 + 3x^2$

(20p)

3) Calculate the following integrals:

$$\int x \sin 2x dx =$$

$$\int (x^3 + \sin x)^5 \cdot (3x^2 + \cos x) dx =$$

(5p+5p)

4) Give the exact definition of the Riemann-integral

(6p)

5) Give the connection between the monotonity of a function and the sign of its derivative (several theorems).

(6p)