Course no. 66-110

Subject: Mathematics for economists

Duration of the exam: two and a half hours

1. Express your opinion and explain each of the following claims:

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1. The equation *x*3 + 4*x* – 1 = 0 has one solution.
2. If *f*(*x*) is continuous and differentiable at point *x* = 0, and if *f*’(0) = 2 and *f*(0) = 3, then 
3. The function  fulfills *f*’(0) = 0.
4. The function receives the value zero in the section (0,2).

2. Given the function 

1. Determine and explain whether function *f*(*x*) is even, odd, or other.
2. Is *g*(*x*) an injective (one-on-one) function? If so, calculate its inverse function.
3. Calculate *f*(*g*(*x*)).

3. Given the function:

 What must a and b be so that the function will be continuous at every point?

4. Calculate the following limits:

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3. Differentiate the following functions:

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 **GOOD LUCK!**