Course no. 66-111 Date of exam: 2013 moed A

Subject: Mathematics for economists

Duration of the exam: three hours

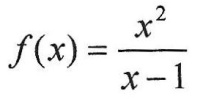
Auxiliary material: a calculator

1. Calculate the following limits:

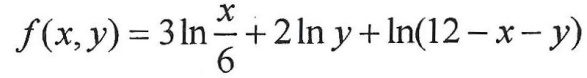
|  |  |
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| A.  B. | 002.jpg |

2. Calculate the following integrals:

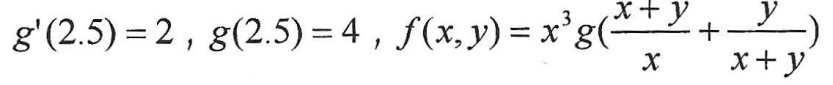
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| A.  B.  C. | 003.jpg |

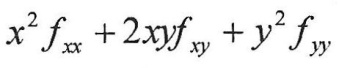
3. Investigate the function  and draw its graph.

4. Calculate the minimum, maximum and saddle points of the function:

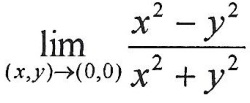


5. Given function *f* (*x*, *y*) in two variables and *g* (*t*) in one variables. It is known that



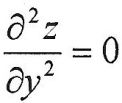
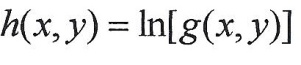
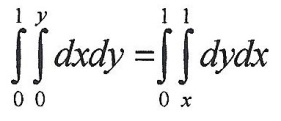
1. Is *f* homogeneous? If so, of what degree?
2. Calculate *fx* at point (1, 1).
3. Calculate  at point (1, 1).

6. Express your opinion on each of the following claims:

1. The limit does not exist.
2. *f* (*x*, *y*) is homogeneous of degree 1, therefore the following exists:

1) 010.jpg

2) 011.jpg for *a* ≠ 0

1. Given the implicit function 012.jpg, therefore 
2. *g* (*x*, *y*) is a homogeneous function of degree 2. We will define , therefore *hxx* is not a homogenous function.
3. 

**GOOD LUCK!**