

Seminar 14

1. Verificati daca urmatoarele transformari de coordonate sunt biunivoce si nesingulare pe domeniul specificat. In caz afirmativ determinati transformarea inversa.

a) $\begin{cases} x = uv \\ y = uv^2 \end{cases}, (u, v) \in \mathbb{R}^2, uv \neq 0$

b) $\begin{cases} x = \frac{u+v}{1-uv} \\ y = \operatorname{arctg} u + \operatorname{arctg} v \end{cases}, (u, v) \in \mathbb{R}^2, uv \neq 1$

c) $\begin{cases} x = u^2 - v^2 \\ y = uv \end{cases}, (u, v) \in \mathbb{R}^2 \setminus \{0, 0\}$

2. Utilizand o transformare convenabila evaluati integralele duble pe multimile specificate

a) $\iint_A y \, dx dy, \quad A = \{(x, y) \in \mathbb{R}^2 \mid 1 \leq x^2 + y^2 \leq 4, x \geq 0, y \geq 0\}$

b) $\iint_A (x^2 + y^2) \, dx dy, \quad A = \{(x, y) \in \mathbb{R}^2 \mid x^2 + 2y^2 \leq 1\}$

c) $\iint_A dx dy, \quad A = \{(x, y) \in \mathbb{R}^2 \mid 4 \leq xy \leq 8, 5 \leq \frac{x}{y} \leq 15, x > 0, y > 0\}$

ULTIMA PARTE: Discutarea unui subiect de examen!