Vybrané partie z MA II
Domácí úkoly (transformace dvojného integrálu)

4. prosince 2012

Spočtěte užitím transformace do polárních souřadnic

1. $\int\int_D |x| \, \mathrm{d}x\mathrm{d}y, \ D = \{[x,y] \in \mathbb{R}^2 |\ x^2 + y^2 \leq ay, a > 0\}$
2. $\int\int_D |y| \, \mathrm{d}x\mathrm{d}y, \ D = \{[x,y] \in \mathbb{R}^2 |\ x^2 + y^2 + 2x - 6y + 6 \leq 0\}$
3. $\int\int_D |x| \, \mathrm{d}x\mathrm{d}y, \ D = \{[x,y] \in \mathbb{R}^2 |\ x^2 + y^2 - 4y \leq 0 \leq x^2 + y^2 - 2y, y \leq -x\}$
4. $\int\int_D |y| \, \mathrm{d}x\mathrm{d}y, \ D = \{[x,y] \in \mathbb{R}^2 |\ x^2 + y^2 - 2x \geq 0, x^2 + y^2 - 4x \leq 0\}$
5. $\int\int_D |x| \, \mathrm{d}x\mathrm{d}y, \ D = \{[x,y] \in \mathbb{R}^2 |\ x^2 + y^2 \leq ay, y + \sqrt{3}x \geq 0, a \geq 0\}$
6. $\int\int_D |x| y^2 \, \mathrm{d}x\mathrm{d}y, \ D = \{[x,y] \in \mathbb{R}^2 |\ 1 \leq x^2 + y^2 \leq 4, x \leq y \leq 0\}$

Výsledky: $(\frac{a^3}{6}, \ 12\pi, \ \frac{112}{3}, \ \frac{28}{3}, \ \frac{23a^3}{192}, \ \frac{31\sqrt{3}}{60})$