

תרגיל 12 - לא להגשה

חשב את האינטגרלים הבאים:

$$D = \{(x, y) \mid (x^2 + y^2)^2 \leq x^2 - y^2, \quad x \geq 0\} \iint_D \sqrt{1 - x^2 - y^2} dx dy \quad .1$$

$$D = \{(x, y) \mid x^2 + y^2 \leq Rx\} \iint_D \sqrt{R^2 - x^2 - y^2} dx dy \quad .2$$

$$D = \{(x, y, z) \mid \frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} \leq 1, \quad x \geq 0\} \iiint_D x dx dy dz \quad .3$$

$$D = \{(x, y, z) \mid \sqrt{y^2 + z^2} \leq x \leq \sqrt{4 - y^2 + z^2}\} \iiint_D (x + y + z) dx dy dz \quad .4$$

$$D = \{(x, y, z) \mid x^2 + y^2 + z^2 \leq 3, \quad x^2 + y^2 \leq 2z\} \iiint_D (x + y + z)^2 dx dy dz \quad .5$$

$$D = \{(x, y, z) \mid 1 \leq x^2 + y^2 \leq 4 - z^2\} \iiint_D dx dy dz \quad .6$$

$$D = \{(x, y, z) \mid x^2 + y^2 \leq z^2, \quad x^2 + y^2 + z^2 \leq 1\} \iiint_D dx dy dz \quad .7$$

$$D = \{(x, y) \mid 0 \leq y \leq x \leq 1\} \iint_D ye^{x^3} dx dy \quad .8$$

$$D = \{(x, y) \mid 0 \leq x \leq 4, \quad 0 \leq y, \quad 1 \leq x^2 - y^2 \leq 9\} \iint_D xye^{x^2 - y^2} dx dy \quad .9$$

$$D = \{(x, y) \mid x^3 \leq y \leq 4x^3, \quad \frac{1}{2} \leq x + y \leq 1\} \iint_D \frac{x + 3y}{x^4} e^{\frac{y}{x^3}} dx dy \quad .10$$

$$D = \{(x, y) \mid 0 \leq x \leq 2, \quad 0 \leq y \leq x\} \iint_D \frac{2x^2 e^{x^2}}{x^2 + y^2} dx dy \quad .11$$

$$D = \{(x, y) \mid \sqrt{x} + \sqrt{y} \leq 1\} \iint_D \sqrt{\sqrt{x} + \sqrt{y}} dx dy \quad .12$$