

12.2 Iterated Integrals

Definition of $\int_a^b \int_c^d f(x, y) dy dx$

Example 1

Compute $\int_0^3 \int_1^4 x^2 y dy dx$

Example 2

Compute $\int_1^4 \int_0^3 x^2 y dx dy$

Fubini's theorem

Example 3

Evaluate $\iint_R (x - 3y^2) dA$ where $R = \{(x, y) | 0 \leq x \leq 2, 1 \leq y \leq 2\}$.

Example 4

Evaluate $\iint_R y \sin(xy) \, dA$ where $R = [1,2] \times [0, \pi]$.

Theorem

Example 5

If $R = [0,2] \times [0,4]$ then find $\iint_R x^2 y \, dA$

HW #1, 3, 5, 11, 13, 15, 21, 27, 31