

1. つぎの二重積分を計算せよ.

$$(1) \int_0^1 dy \int_0^1 (3x^2y^3 + 5x^3y^2) dx$$

$$(2) \int_0^1 dy \int_0^1 \frac{1}{(1+3x)(1+4y)} dx$$

$$(3) \int_0^{\frac{\pi}{2}} dy \int_0^{\frac{\pi}{2}} \sin(2x+3y) dx$$

$$(4) \int_0^1 dy \int_0^1 \frac{xy^3}{1+5x^2y^2} dx$$

$$(5) \int_0^1 dy \int_0^1 y \log(1+4xy) dx$$

2. つぎの三重積分を計算せよ.

$$(1) \int_0^1 dz \int_0^1 dy \int_0^1 (x^3 + 2y^3 + 3z^3 + xyz) dx$$

$$(2) \int_0^{\frac{\pi}{4}} dz \int_0^{\frac{\pi}{4}} dy \int_0^{\frac{\pi}{4}} \sin(3x+y+2z) dx$$

$$(3) \int_1^2 dz \int_1^2 dy \int_1^2 \frac{x^2 + 3y^2 + 2z^2}{xyz} dx$$

$$(4) \int_0^1 dz \int_0^1 dy \int_0^1 \frac{1}{1+x+y+z} dx$$

$$(5) \int_0^1 dz \int_0^1 dy \int_0^1 \sqrt{x+y+z} dx$$