

2005年度 微積分学II 演習問題(9)

次の $f(x, y)$ と閉区間 I について、重積分 $\iint_I f(x, y) dx dy$ を求めよ。
(ただし、 $[a, b] \times [c, d] = \{(x, y) \mid a \leq x \leq b, c \leq y \leq d\}$ とする。)

1. $f(x, y) = (x + y)^2, I = [0, 1] \times [0, 1]$
2. $f(x, y) = (x - y)(2x + y), I = [-1, 1] \times [0, 1]$
3. $f(x, y) = e^{x+2y}, I = [-1, 1] \times \left[-\frac{1}{2}, \frac{1}{2}\right]$
4. $f(x, y) = \sin(x + y), I = [0, \pi] \times [0, \pi]$
5. $f(x, y) = \cos(2x - y), I = \left[0, \frac{\pi}{2}\right] \times \left[0, \frac{\pi}{2}\right]$
6. $f(x, y) = x + y, I = [0, 1] \times [0, 2]$
7. $f(x, y) = x^2 - y^2, I = [-1, 1] \times [-2, 2]$
8. $f(x, y) = x^2 - 2y^2 + 1, I = [1, 2] \times [0, 4]$