14-4考古題

師大工教一

102年#4(c)

4. Evaluate the following iterated integrals. (18 pts)

(a) $\int_0^{2/3}\int_y^{2-2y}(x+2y)e^{(y-x)}\,dxdy$ (b) $\int_0^{\pi/4}\int_y^{\pi/4}\frac{\sec^2 x}{x}\,dxdy$ (c) $\int_0^1\int_x^{\sqrt{2-x^2}}(x+2y)\,dydx$

103年#1(c)

1. Evaluate the following iterated integrals. (5 pts each)

(a) $\int_1^e \int_1^{e^2} \int_1^{e^3} \frac{1}{xyz}\, dxdydz$

(b) $\int_0^1 \int_{\sqrt[3]{y}}^1 \frac{2\pi \sin(\pi x^2)}{x^2}\, dxdy$

(c) $\int_{-1}^1 \int_{-\sqrt{1-y^2}}^{\sqrt{1-y^2}} e^{x^2+y^2+2}\, dxdy$

(d) $\int_0^1 \int_{-y}^{y} 4(x+y)e^{x-y}\, dxdy$

103年#6

6. Find the average value of the function $f(x, y) = \sqrt{4 - x^2 - y^2}$ above the disk $x^2 + y^2 \leq 4$ in the xy-plane. (10 pts)

104年#3(b)

3. 計算下列疊代積分 (逐次積分)(iterated integral)：

(a) $\int_0^2 \int_x^2 2y^2 \sin(xy)\, dydx$ (6 分)

(b) $\int_{-1}^1 \int_0^{\sqrt{1-x^2}} \cos(x^2+y^2)\, dydx$ (6 分)

(c) $\int_0^2 \int_{\frac{y}{2}}^{\frac{y}{2}+2} y^3(2x-y)e^{(2x-y)^2}\, dxdy$ (8 分)

105年(分)#12

12. Evaluate the iterated integral by converting to polar coordinates. (7 points)

$$\int_0^4 \int_0^{\sqrt{16-y^2}} (x^2 + y^2)\, dx\, dy .$$