15.2 Double Integrals over General Regions

◎ 單選擇題

1. Which is the **value** of the integral $\iint_{\Omega} x^2\, dA$, where $\Omega = \{(x, y) \mid |x| + |y| \le 1\}$?

(A) $\frac{1}{3}$; (B) $\frac{1}{4}$; (C) $\frac{1}{5}$; (D) $\frac{1}{6}$.

Ans: A [101 學年度]

2. The iterated integral $\int_0^1 \int_y^1 (1 + x^2)^{-1} dxdy$ =

(A) $\tan^{-1} 1$; (B) $\ln 2$; (C) $\frac{\tan^{-1} 1}{2}$; (D) $\frac{\ln 2}{2}$.

Ans: D [103 學年度]

3. The **area** of the region bounded by $|x|^{\frac{1}{3}} + |y|^{\frac{1}{3}} = 1$ is

(A) $\frac{1}{20}$; (B) $\frac{1}{10}$; (C) $\frac{1}{5}$; (D) $\frac{1}{2}$.

Ans: C [104 學年度]

4. The iterated integral $\int_0^1 \int_x^1 2\sin(y^2) dydx =$

(A) $\cos 1 - 1$; (B) $1 + \sin 1 - \cos 1$;
(C) $1 - \cos 1$; (D) $1 + \sin 1$.

Ans: C [104 學年度]

5. The iterated integral $\int_0^1 \int_y^1 x^2 e^{xy} dxdy =$

(A) $\frac{e-2}{2}$; (B) $\frac{e-2}{3}$; (C) $\frac{e-2}{4}$; (D) $\frac{e-2}{5}$.

Ans: A [105 學年度]

◎ 填空題

1. Evaluate $\int_0^{\pi}\int_y^{\pi} \frac{\sin x}{x}\, dxdy.$ _____

Ans: 2 [99 學年度]

2. Evaluate the integral $\iint_R \frac{\sin y}{y} dA$, where $R=\{(x,y)|0\le x\le \pi, x\le y\le \pi\}$._____

Ans: 2 [101 學年度]