微積分（C）附件

【章節 17.3】

① Evaluate the double integral.

ⓐ $\iint_D \mathrm{xcosy\ dxdy}$, D is bounded by y=0, y=x^2, x=1.

ⓑ $\iint_D \mathrm{y^3 dxdy}$, D is the triangular region with vertices (0,2), (1,1), (3,2).

ⓒ $\iint_D (2\mathrm{x}-\mathrm{y})\mathrm{dxdy}$, D is bounded by the circle with center the origin and radius 2.

② Find the volume of the given solid.

ⓐUnder the surface z=xy and above the triangle with vertices (1,1), (4,1), and (1,2).

ⓑEnclosed by the surfaces $\mathrm{z}=\mathrm{x}^2$, y=x^2 and the planes z=0 and y=4.

ⓒBounded by the cylinder $x^2+y^2=1$ and the planes y=z , x=0 ,z=0 in the first octant.

③ Sketch the region of integration and change the order of integration.

ⓐ$\int_0^3 \int_{-\sqrt{9\ \ +y^2}}^{\sqrt{9\ \ +y^2}} \mathrm{f(x,y)dxdy}$ ⓑ$\int_1^2 \int_0^{\ln x} \mathrm{f(x,y)dydx}$

④ Evaluate the integral by reversing the order of integration.

ⓐ$\int_0^1 \int_{3y}^3 e^{x^2}\mathrm{dxdy}$ ⓑ$\int_0^1 \int_{\sqrt{y}}^1 \sqrt{x^3+1}\ \mathrm{dxdy}$

ⓒ$\int_0^1 \int_{\sin^{-1} y}^{\frac{\pi}{2}} (\cos x)\sqrt{1+(\cos x)^2}\mathrm{dxdy}$

⑤ In evaluating a double integral over a region D , a sum of iterated integrals was obtained as follows

$$\iint_D \mathrm{f(x,y)dxdy} = \int_0^1 \int_0^{2y} \mathrm{f(x,y)dxdy} + \int_0^3 \int_0^{3-y} \mathrm{f(x,y)dxdy}$$

Sketch the region D and express the double integral as an iterated integral with reversed order of integration.