1　以下の 2 重積分を計算せよ.

(1) $\displaystyle\iint_D \frac{x^2}{1+y^2}\,dxdy,\quad D=\{(x,y)\,|\,0\leq x\leq 2,\,-1\leq y\leq 1\}$

(2) $\displaystyle\iint_D y^2\cos(xy)\,dxdy,\quad D=\{(x,y)\,|\,0\leq x\leq 2,\,0\leq y\leq\pi\}$

(3) $\displaystyle\iint_D x^y\,dxdy,\quad D=\{(x,y)\,|\,0\leq x\leq 1,\,1\leq y\leq 2\}$