# Worksheet: Setting up double integrals

Set up but do not (yet) evaluate the following integrals.

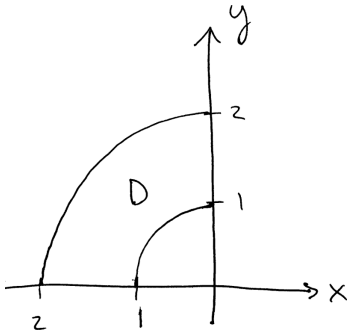
**A.** Choose the order of integration you prefer.

$$\iint_D x\,dA \quad \text{where} \quad D = \{(x,y) \,\Big|\, 0 \le y \le 4x(1-x)\}$$

**B.** Same integral but in other order.

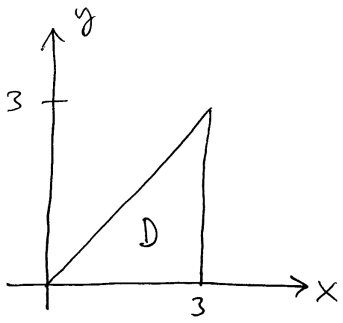
**C.** Set up in polar. $D$ is sketched at right.

$$\iint_D xe^{-x^2-y^2}\,dA$$



**D.** Set up in polar. $D$ is sketched at right.

$$\iint_D xy\,dA$$




**E.** Find the area inside the rose $r = 2\sin(2\theta)$ and outside the circle $x^2 + y^2 = 1$.

**F.** Find the volume of the solid bounded by the cylinders $x^2 + y^2 = r^2$ and $y^2 + z^2 = r^2$.