Double Integrals and Change of Variables
August 7 - AM

1. Compute the integral
$$\int\int_D xy^2\,dA$$
where D is the rectangle defined by $0 \leq x \leq 2$ and $0 \leq y \leq 1$.

2. Compute the integral
$$\int\int_D xy^2\,dA$$
where D is the rectangle defined by $0 \leq x \leq 2$ and $0 \leq y \leq \frac{x}{2}$. Make x the outer integral variable.

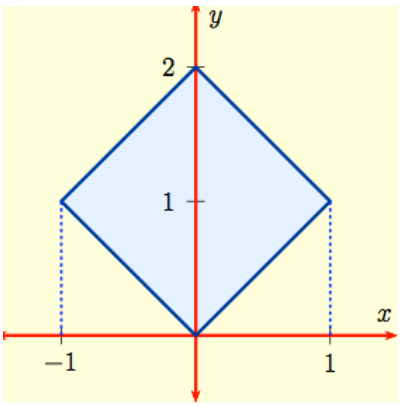
3. Compute the integral
$$\int\int_D xy^2\,dA$$
where D is the rectangle defined by $0 \leq x \leq 2$ and $0 \leq y \leq \frac{x}{2}$. Make y the outer integral variable.

4. Compute the integral
$$\int\int_D xy^2\,dA$$
where D is the disk of radius 1.

5. Compute the integral

$$\int\int_D (x+y)\,dA$$

where D is the diamond region below.



6. Compute the integral

$$\int\int_D (x^2 - xy + y^2)\,dA$$

where D is the elliptical region given by $x^2 - xy + y^2 \leq 2$ and using the transformation $x = \sqrt{2}u - \sqrt{\frac{2}{3}}\,v$ and $y = \sqrt{2}u + \sqrt{\frac{2}{3}}\,v$.