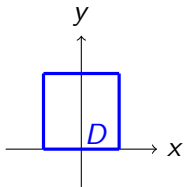
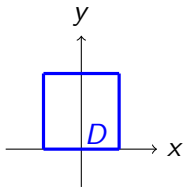


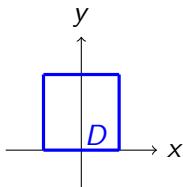
Beräkna

$$\iint_D 3x^2y \, dx dy$$

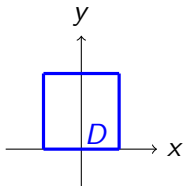
där $D = \{(x, y) \in \mathbb{R}^2 : |x| \leq 1, 0 \leq y \leq 2\}$.



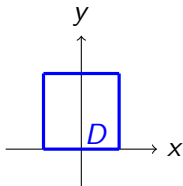




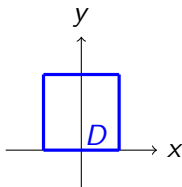
$$\iint_D 3x^2 y dx dy = \int_0^2 \left(\int_{-1}^1 3x^2 y dx \right) dy$$



$$\begin{aligned} \iint_D 3x^2 y dx dy &= \int_0^2 \left(\int_{-1}^1 3x^2 y dx \right) dy = \\ &= \int_0^2 [x^3 y]_{x=-1}^1 dy \end{aligned}$$



$$\begin{aligned}\iint_D 3x^2 y dx dy &= \int_0^2 \left(\int_{-1}^1 3x^2 y dx \right) dy = \\ & \int_0^2 [x^3 y]_{x=-1}^1 dy = \\ & \int_0^2 (y - (-y)) dy\end{aligned}$$



$$\begin{aligned}\iint_D 3x^2 y dx dy &= \int_0^2 \left(\int_{-1}^1 3x^2 y dx \right) dy = \\ &= \int_0^2 [x^3 y]_{x=-1}^1 dy = \\ &= \int_0^2 (y - (-y)) dy = [y^2]_0^2 = 4.\end{aligned}$$

$$\iint_D 3x^2 y dx dy = \int_{-1}^1 \left(\int_0^2 3x^2 y dy \right) dx$$

$$\begin{aligned}\iint_D 3x^2 y dx dy &= \int_{-1}^1 \left(\int_0^2 3x^2 y dy \right) dx = \\ &\int_{-1}^1 \left[\frac{3x^2 y^2}{2} \right]_{y=0}^2 dx\end{aligned}$$

$$\begin{aligned}\iint_D 3x^2 y dx dy &= \int_{-1}^1 \left(\int_0^2 3x^2 y dy \right) dx = \\ \int_{-1}^1 \left[\frac{3x^2 y^2}{2} \right]_{y=0}^2 dx &= \\ \int_{-1}^1 (6x^2) dx &\end{aligned}$$

$$\begin{aligned}\iint_D 3x^2 y dx dy &= \int_{-1}^1 \left(\int_0^2 3x^2 y dy \right) dx = \\ \int_{-1}^1 \left[\frac{3x^2 y^2}{2} \right]_{y=0}^2 dx &= \\ \int_{-1}^1 (6x^2) dx &= [2x^3]_{-1}^1 = 4.\end{aligned}$$