

$$(2) \int_D |x-y| dx dy$$

$$I_1 = \int_{x=0}^2 \int_{y=x}^2 (y-x) dy dx$$

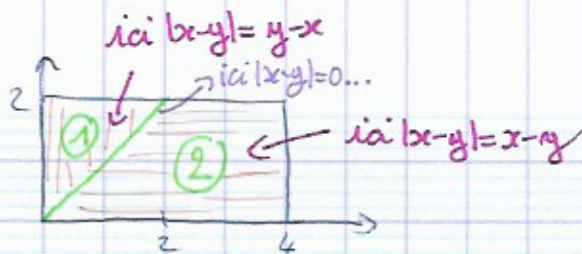
$$= \int_{x=0}^2 \left[\frac{y^2}{2} - xy \right]_{y=x}^2 dx$$

$$= \int_{x=0}^2 \left(2 - 2x - \frac{x^2}{2} + x^2 \right) dx$$

$$= \int_{x=0}^2 \left(2 - 2x + \frac{x^2}{2} \right) dx$$

$$= \left[2x - x^2 + \frac{x^3}{6} \right]_0^2$$

$$= 4 - 4 + \frac{8}{6} = \left(\frac{4}{3} \right)$$



$$I_2 = \int_{y=0}^2 \int_{x=y}^4 (x-y) dx dy$$

$$= \int_{y=0}^2 \left[\frac{x^2}{2} - xy \right]_{x=y}^4 dy$$

$$= \int_{y=0}^2 \left(8 - 4y - \frac{y^2}{2} + y^2 \right) dy$$

$$= \int_{y=0}^2 \left(8 - 4y + \frac{y^2}{2} \right) dy$$

$$= \left[8y - 2y^2 + \frac{y^3}{6} \right]_0^2$$

$$= 16 - 8 + \frac{8}{6} = 8 + \frac{4}{3} = \left(\frac{28}{3} \right)$$

$$I = \frac{4}{3} + \frac{28}{3} = \frac{32}{3} \approx 10,67$$