

Ex 10.2

$$\iint_{D_1} (x+y) dx dy = \int_0^2 \left[\int_{2-x}^2 (x+y) dy \right] dx \quad (\text{see Ex 10.1})$$

$$= \int_0^2 \left(xy + \frac{y^2}{2} \right) \Big|_{2-x}^2 dx$$

$$= \int_0^2 \left(x(2-2+x) + \frac{1}{2}(4-(2-x)^2) \right) dx$$

$$= \int_0^2 \left(x^2 + 2 - \frac{1}{2}(4-4x+x^2) \right) dx$$

$$= \int_0^2 \left(\frac{1}{2}x^2 + 2x \right) dx$$

$$= \frac{x^3}{6} \Big|_0^2 + x^2 \Big|_0^2 = \frac{8}{6} + 4$$

$$= \frac{16}{3} \text{ bzw. } (5,33)$$