

**Exercise 1** Find the average height of the paraboloid  $z = x^2 + y^2$  over the region

$$D = \{(x, y) : 1 \leq x \leq 2, 0 \leq y \leq 1\}$$

**Exercise 2** Find the area of the region enclosed by the positive  $x$ -axis (polar line) and spiral  $r = 3e^{2\theta}$ ,  $0 \leq \theta \leq 2\pi$ .