

Chapter 15, Section 3

The area of a closed bounded region R is

To evaluate the area we use the constant function $f(x,y)=1$ over R

Average value of f over R is

Examples:

$$x = y - y^2, \quad y = -x$$

$$y = \ln x, \quad y = 2 \ln x, \quad x = e \text{ in first quadrant}$$

$$y = x - 2, \quad y = -x, \quad y = \sqrt{x}$$

$$\int_0^3 \int_{-x}^{x(2-x)} dy dx$$

$$\int_{-1}^2 \int_{y^2}^{y+2} dx dy$$