

## 16.2 and 16.3: Iterated Integrals

### Calculus III

College of the Atlantic

1. Let  $R$  be a triangular region with corners at  $(0, 0)$ ,  $(0, 4)$ , and  $(2, 0)$ . Write

$$\int_R xy \, dA, \quad (1)$$

as an iterated integral in two different ways and evaluate it.

2. Let  $R$  be the triangular region with corners at  $(0, 3)$ ,  $(1, 1)$ , and  $(5, 3)$ . Write the integral

$$\int_R 3xy^2 \, dA, \quad (2)$$

as an iterated integral and sketch the region of integration.

3. Let  $R$  be a circle of radius 2 centered at the origin. Write

$$\int_R xy \, dA, \quad (3)$$

as an iterated integral and evaluate it.

4. Let  $R$  be the region bounded by  $y = \sqrt{x}$  and  $y = x^3$ . Evaluate

$$\int_R 4xy - y^3 \, dA, \quad (4)$$

and sketch the region of integration.

5. Evaluate the integral and sketch the region of integration

$$\int_1^2 \int_0^2 \int_0^1 \rho(x, y, z) \, dx \, dz \, dy, \quad (5)$$

where  $\rho(x, y, z) = z + x$ .