

Homework 8

Problem 1. What is the area of the region in the plane bounded by the curve given in polar coordinates by

$$r = 4 + 2 \cos(2\theta).$$

Problem 2. Calculate

$$\iint x^2 dA$$

over the triangular region with vertices $(0; 0)$, $(1; 0)$ and $(1; 2)$.

Problem 3. Evaluate

$$\int_0^2 \int_{x^2}^4 \frac{e^{\sqrt{y}}}{y} dy dx.$$

Problem 4. Evaluate

$$\int_0^4 \int_{\sqrt{x}}^2 \sin(y^3) dy dx.$$

Problem 5. Compute the double integral

$$\int_0^1 \int_{e^y}^e \frac{e-x}{\ln(x)} dx dy$$