

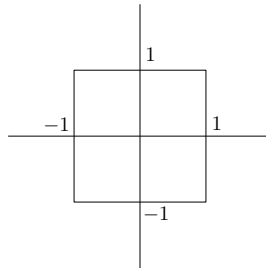
Exercises: Line Integrals by Arc Length

Problem 1. Let C be the curve from point $p(0, 0)$ to point $q(1, 1)$ on the parabola $y = x^2$. Calculate $\int_C x \, ds$.

Problem 2. Let C be the line segment from point $p(1, 2, 3)$ to point $q(8, 7, 6)$. Calculate $\int_C x+z^2 \, ds$.

Problem 3. Let C be the circle $x^2 + y^2 = 1$. Calculate $\int_C y \, ds$.

Problem 4. Let C be the boundary of the square shown below:



Calculate $\int_C y \, ds$.

Problem 5. Let C be the intersection of two surfaces: sphere $x^2 + y^2 + z^2 = 3$ and plane $x = y$. Calculate $\int_C x^2 \, ds$.