



Green's Theorem: Problems

Problem 1. Let C be the perimeter of the rectangle with sides $x = 1$, $y = 2$, $x = 3$, and $y = 3$. Evaluate the integral

$$\int_C (3x^4 + 5) dx + (y^5 + 3y^2 - 1) dy.$$

Problem 2. Let $\mathbf{F}(x, y) = (2y + e^x)\hat{\mathbf{i}} + (x + \sin(y^2))\hat{\mathbf{j}}$ and C be the circle $x^2 + y^2 = 1$. Evaluate

$$\int_C \mathbf{F} \cdot d\mathbf{s}.$$

Problem 3. Use Green's Theorem to find the area of a disc of radius a .