

Math 13 Worksheet #13: Green's Theorem

(1) Use Green's Theorem to evaluate $\int_C \mathbf{F} \cdot d\mathbf{r}$, where $\mathbf{F} = \langle y, 2x \rangle$ and C is the boundary of the region bounded by the x-axis and the curve $y = 1 - x^2$, transversed in the clockwise direction.

(2) Evaluate $\int_C \mathbf{F} \cdot d\mathbf{r}$ where $\mathbf{F} = \langle \frac{1}{2}x^2y^3, xy \rangle$ and C is the circle with radius 3, centered at the origin transversed clockwise.

(3) Evaluate $\iint_R (3xy - 4x^2y) dA$ where R is the unit disk.