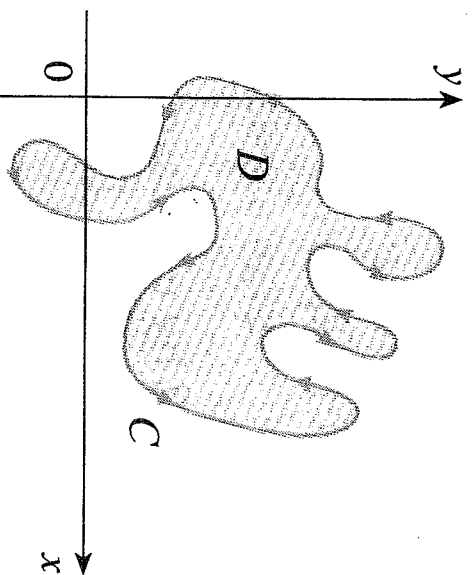
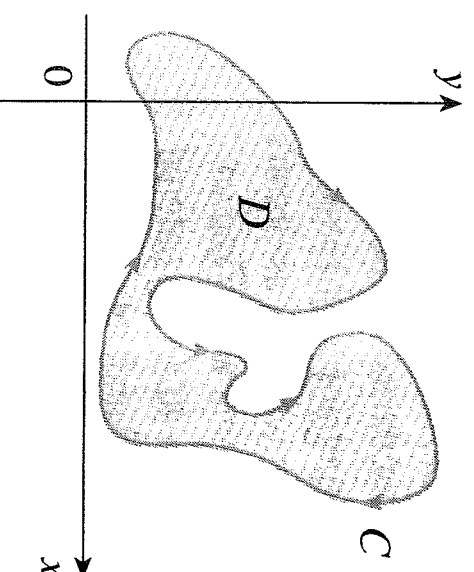


Green's Theorem gives the relationship between a line integral around a simple closed curve C and a double integral over the plane region D bounded by C . (See Figure 1. We assume that D consists of all points inside C as well as all points on C .) In stating Green's Theorem we use the convention that the **positive orientation** of a simple closed curve C is to a single *counterclockwise* traversal of C . Thus, if C is given by the vector function $\mathbf{r}(t)$, $a \leq t \leq b$, then the region D is always on the left as the point $\mathbf{r}(t)$ traverses C . (Figure 2.)



(a) Positive orientation



(b) Negative orientation

Green's Theorem Let C be a positively oriented, piecewise-smooth, simple closed curve in the plane and let D be the region bounded by C . If P and Q have continuous partial derivatives on an open region that contains D , then