

Let $f(x, y) = (2x + y + 2, x + 3)$, let γ_1 be the upper unit semicircle oriented counterclockwise, and let γ_2 be the line segment connecting $(1, 0)$ to $(-1, 0)$.

Calculate

$$\int_{\gamma_1} f(X) \cdot dX \quad \text{and} \quad \int_{\gamma_2} f(X) \cdot dX$$