NAME and SECTION NUMBER

Problem 1 (10 points) Set up the following line integral, with C: the set of linear paths from (0, 0) to (1, 0) to (0, 2) and back to (0, 0). Set it up also with Green’s Theorem.

\[ \oint_C x\,dx + xy\,dy \]

Problem 2 (10 points) Evaluate the following line integral, where C is the line segment from (−1, 0) to the point (1, 0), followed by the parabolic arc \( y = 1 - x^2 \) from (1, 0) to (−1, 0)

\[ \oint_C x^3\,dx + (x^3 + y^2)\,dy \]

Problem 3 (10 points) Find the work done by \( \vec{F}(x, y) = \langle x \sin(y), y \rangle \) in moving an object along the path \( y = x^2 \) from (−1, 1) to (2, 4).