You have 10 minutes to complete the quiz. Calculators are not permitted, and remember to show your calculations and explain your reasoning in order to receive full credit.

1. If \( \mathbf{F}(x, y) = \langle \sin x - y, \cos y + x \rangle \), find the work that \( \mathbf{F} \) does on a goat that runs once clockwise around the triangle with vertices \((0,0), (3,0), \) and \((1,2)\).

Use Green’s Theorem, keeping in mind that the orientation is clockwise:

\[
\int_C \mathbf{F} \cdot \mathbf{r} = \int_C P \, dx + Q \, dy = -\iint_A \frac{\partial Q}{\partial x} - \frac{\partial P}{\partial y} \, dA = -\iint_A 2 \, dA = -2A = -2(3)(2)/2 = -6.
\]