Student name:

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:

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