Quiz 12: Wednesday, April 20
MATH 53 with Professor Stankova
Section 116: 3-4
GSI: Eric Hallman

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 $F(x,y) = \langle -1, -1 \rangle$, find the work that the force field $F$ does on a goat running counterclockwise from $(1,0)$ to $(-1,0)$ along the unit circle.

Set $x(t) = \cos t, y(t) = \sin t$ as $t$ goes from 0 to $\pi$. Then

$$\int_C F \cdot dr = \int_{t=0}^{\pi} \langle -1, -1 \rangle \langle -\sin t, \cos t \rangle \, dt$$

$$= \int_{t=0}^{\pi} \sin t - \cos t \, dt$$

$$= \left[ -\cos t - \sin t \right]_{t=0}^{\pi}$$

$$= 2.$$