Math 2110Q - Multivariable Calculus **Section 16.3 Worksheet**
Name:

1. Evaluate the line integral $\oint_C y\,dx - x\,dy$ where $C$ is the circle centered on the origin of radius 4 in two ways,

   (a) directly using $\oint_C \mathbf{F} \cdot d\mathbf{r} = \int_a^b \mathbf{F}(\mathbf{r}(t)) \cdot \mathbf{r}'(t)dt$,

   (b) and using Green's Theorem.

2. Use Green's Theorem to evaluate $\int_C \mathbf{F} \cdot d\mathbf{r}$ for the vector field $\mathbf{F}(x, y) = \langle e^{-x} + y^2, e^{-y} + x^2 \rangle$ and $C$ is the arc of the curve $y = \cos x$ from $(\pi/2, 0)$ to $(-\pi/2, 0)$ and then the line segment from $(-\pi/2, 0)$ to $(\pi/2, 0)$.