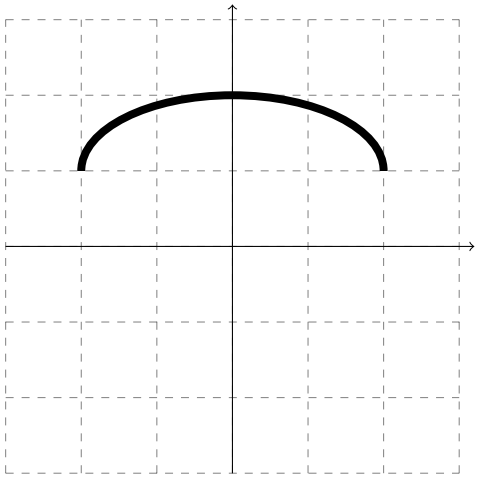
Using Green's theorem. Use Green's theorem to compute the line integral of the vector field $\langle -y, x \rangle$ over the drawn semi-ellipse. (Hint: You can close this up to a closed curve by adding in the line between $(2, 1)$ and $(-2, 1)$. The area of an ellipse is πab, where a and b are minor and major axis.)



Computing Flux. Compute the flux of the vector field $\langle x, y \rangle$ through the curve $\vec{r}(t) = \langle \cos t, \sin t \rangle$ where t varies between 0 and $\pi/2$.

Divergence Theorem. Compute the flux of the vector field $\langle x, y \rangle$ through the curve drawn below.