Quiz, Nov. 6

Name:

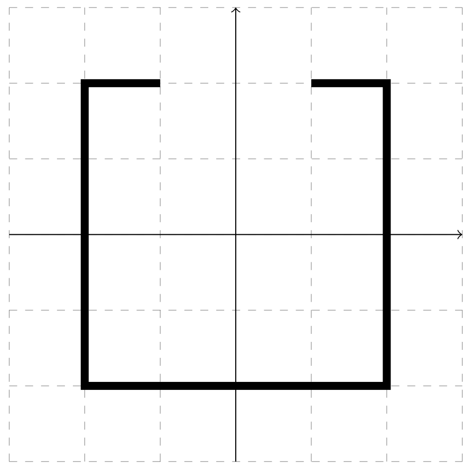
Line Integral. Compute the line integral of $\langle y, x\rangle$ over the curve representing the boundary of a square with corners at $(-1,-1),(1,-1),(-1,1)$ and $(1,1)$.

Flux Integral, I. Set up, but do not compute, flux of the vector field

$$\langle 3x+1, 2\rangle$$

through the line segment between $(1,0)$ and $(0,1)$.

Flux Integral, II. Give the flux of the vector field $\langle x^2, 0\rangle$ through the curve drawn below. (The grid drawn is a unit grid.)



Bonus Problem. *Worth no points!* If $\vec{F} = \langle P, Q\rangle$, let the *perpendicular field* for $\vec{F}$ be

$$\vec{F}^{\perp} := \langle Q, -P\rangle$$

Relate the curl of $\vec{F}$ to the divergence of $\vec{F}^{\perp}$, and state why Green's theorem and the divergence theorem are related for these two vector fields.