Your Name:_____ Signature:_____

TA Name:_____ Drill Time:_____

Quiz 8 (Take Home)

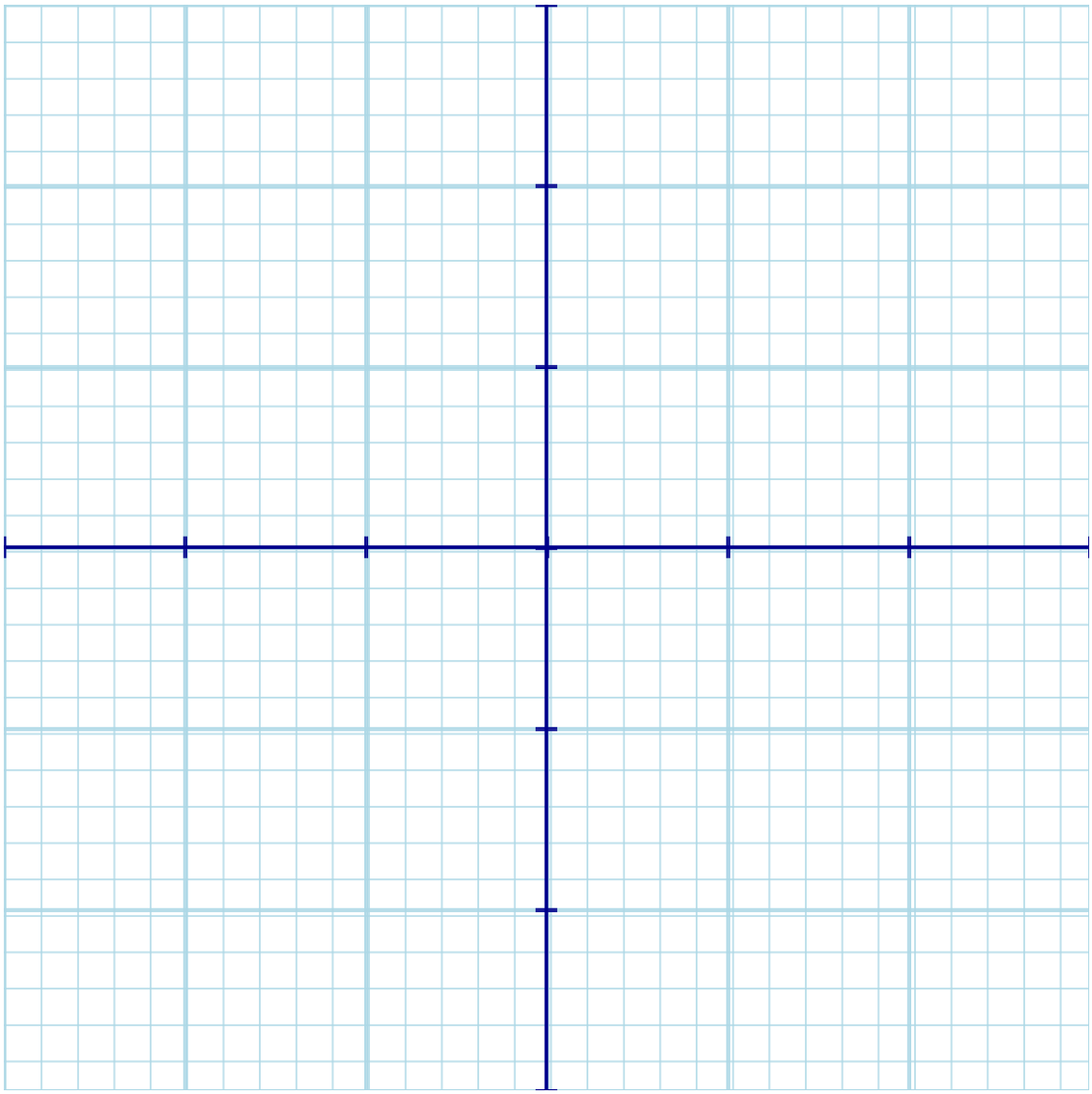
Math 2574: Calculus III

Due: Submit via Gradescope by Tuesday, 4/14/20

Instructions: CLEARLY SHOW ALL YOUR WORK. Put a **box** around your final answer.

This quiz is due by **Tuesday, April 14.** You will submit your work via Gradescope. This quiz (like earlier ones) will be graded on a 0-1-2-3 scale. Remember, the *process and techniques* for finding the right answer are typically more important than the answer itself.

1. Use the region below to draw the vector field in $\mathbb{R}^2$ defined by $\vec{F}(x, y) = \langle y, x - y \rangle$. Draw a vector based at the intersection of each major grid line on the interior of the grid. You do not need to draw vectors based on the boundary of the grid. To scale each vector by a factor of $\frac{1}{5}$, simply use the minor grid lines when drawing vectors. You should draw a total of 25 vectors.



2. Let $f\colon \mathbb{R}^2 \to \mathbb{R}$ be the function defined by $f(x,y) = \frac{x}{x^2+y^2}$ and let C be the line segment in the plane from $(1,1)$ to $(5,5)$. Compute $\int_C f\,ds$.

3. Let $\vec{F}(x,y) = \langle -y, x\rangle$ and let C be the semicircle with parametrization $\vec{r}(t) = \langle 4\cos t, 4\sin t\rangle$ for $0 \le t \le \pi$. Compute $\int_C \vec{F}\cdot\vec{T}\,ds$.