MATH 2263 SECTION 10 QUIZ 11

Time limit: 15 minutes

1. **(5 points)** Evaluate the line integral $\int_C \mathbf{F} \cdot d\mathbf{r}$, where $\mathbf{F}(x,y) = \langle xy, 3y^2 \rangle$ and C is given by the vector function $\mathbf{r}(t) = \langle t^4, t^3 \rangle$, $0 \le t \le 1$.

2. **(6 points)** A thin wire has the shape of the first-quadrant part of circle with center the origin and radius a. If the density function is $\rho(x,y) = kxy$, find the **center of mass** of the wire.

3. **(4 points)** Match the vector fields **F** with the plots labeled I-IV. You **don't have to** justify your reasoning. (Note: The plots have been scaled for clarity.)

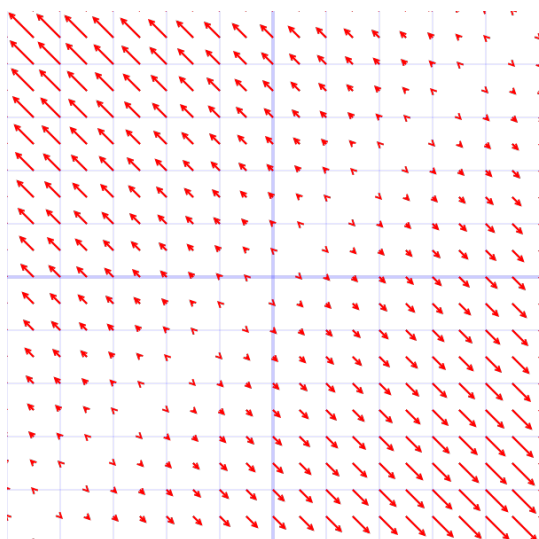$\mathbf{F}(x, y) = \langle \sin(x+y), x \rangle$: _____

$\mathbf{F} = \nabla f$ where $f(x, y) = (x - y)^2$: _____

$\mathbf{F}(x, y) = \langle x + 2, x \rangle$: _____

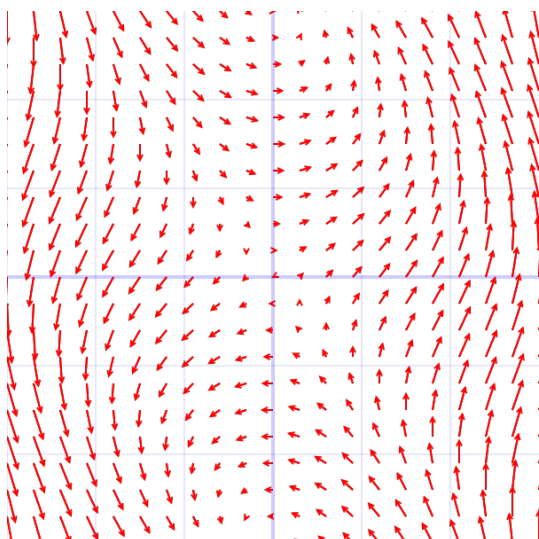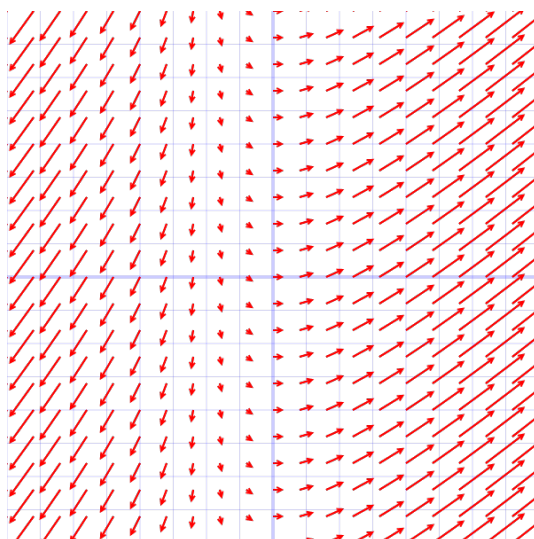$\mathbf{F} = \nabla f$ where $f(x, y) = x(x + y)$: _____

I

II
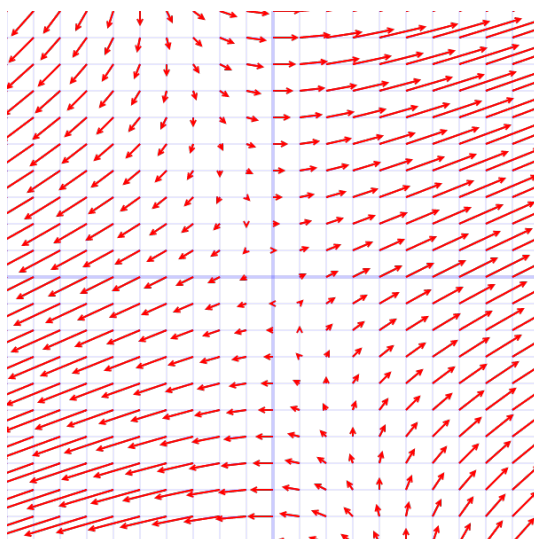
III

IV

SEE OTHER SIDE FOR MORE PROBLEMS