

QUIZ, OCT. 30

NAME:

Identifying Vector Fields. Match the following vector fields to their plots.

$$\langle x, y \rangle$$

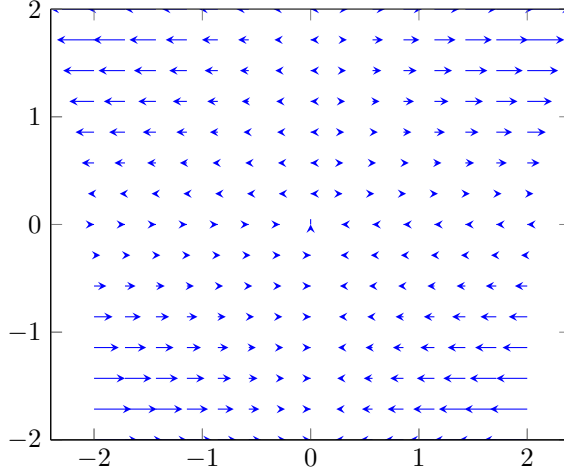
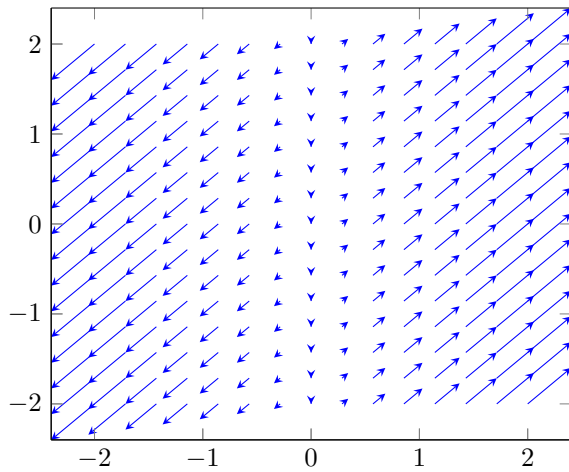
$$\langle x, x \rangle$$

$$\langle xy, 0 \rangle$$

$$\langle y, 0 \rangle$$

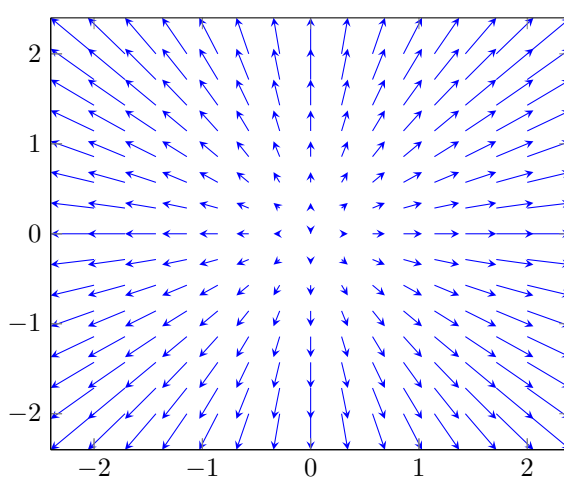
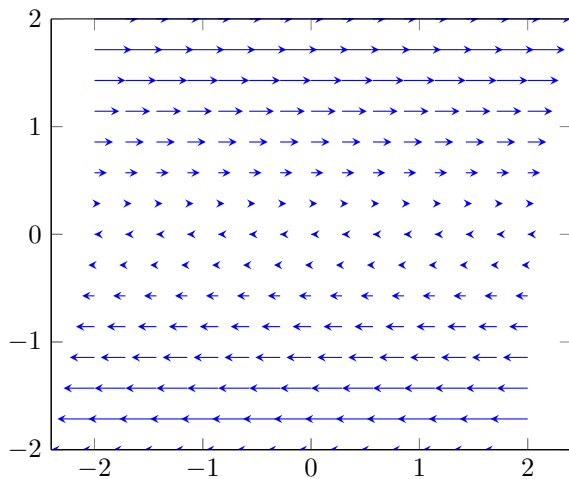
(a)

(b)



(c)

(d)



Line Integral of a function. Set up *but do not compute* the integral of the function $f(x, y) = xy$ along the curve C parameterized by

$$\begin{aligned}x(t) &= t \\ y(t) &= \frac{1}{t}\end{aligned}$$

where t goes between $1/2$ and 2 .

Line Integral of a vector field. Integrate the vector field $\vec{F}(x, y) = \langle x, y \rangle$ along the curve C parameterized by

$$\begin{aligned}x(t) &= t \\ y(t) &= 2t - 1\end{aligned}$$

Where t goes from 0 to 3 .

Bonus Problem. *Worth no points!* Let

$$\vec{F} = \left\langle \frac{-y}{x^2 + y^2}, \frac{x}{x^2 + y^2} \right\rangle$$

Show that $\int_C \vec{F} dr = 0$ if and only if C does not go around the origin.