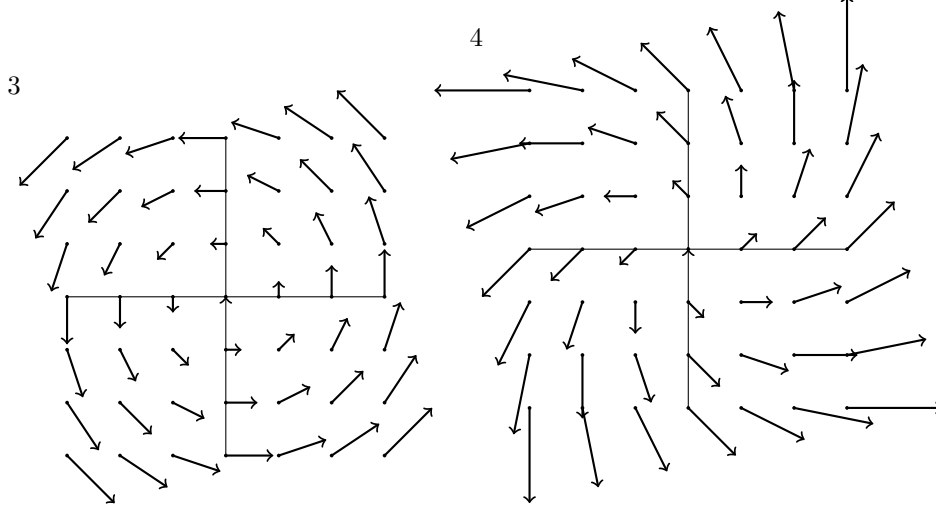
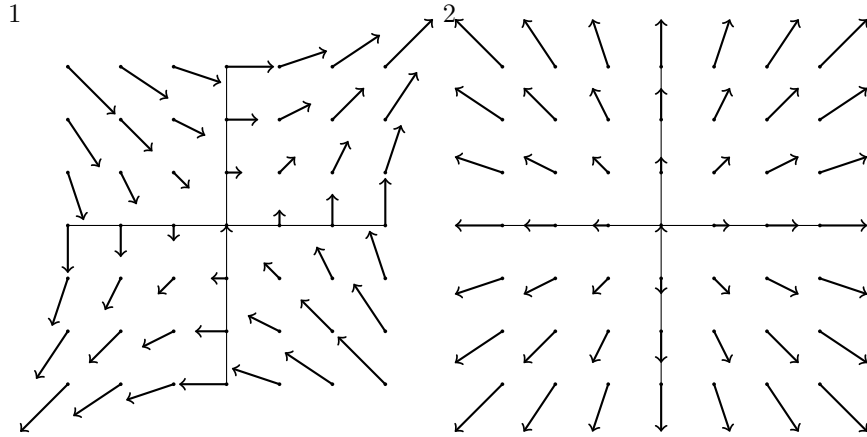


Identify the Vector Field. Mix and Match!

- A $\langle x, y \rangle$
- B $\langle -y, x \rangle$
- C $\langle x - y, x + y \rangle$
- D $\langle y, x \rangle$



Line Integrals I. Compute the integral of the function $f(x, y) = x + y$ over the curve

$$x(t) = t$$

$$y(t) = 2t$$

as t goes from 0 to 1.

Going Around in circles. Let $\vec{r}(t) = (a \cos(t), a \sin(t))$ parametrize a curve that draws a circle of radius a that wraps around the origin n -times. (This means that $0 \leq t \leq 2n\pi$.) Consider the vector field

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

Draw a picture for the vector field, and compute

$$\int_C \vec{F} \cdot d\vec{r}.$$