Vector Fields
Scalar and Vector Fields

Question

Sketch the following plane vector field and determine its field lines.

$\underline{F}(x, y) = y\underline{i} + x\underline{j}$

Answer

The field lines satisfy $\frac{dx}{y} = \frac{dy}{x}$

Thus xdx = ydy.

The field lines are the rectangular hyperbola (and their asymptotes) given by $x^2 - y^2 = C$.