

Vector Fields
Scalar and Vector Fields

Question

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

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

Answer

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

that is $\cos x dx + \cos y dy = 0$.

Thus they are the curves

$$\sin x + \sin y = C.$$

