

Vector Fields
Scalar and Vector Fields

Question

Describe the streamlines of the following velocity field.

$$\underline{v}(x, y, z) = y\underline{i} - y\underline{j} - y\underline{k}$$

Answer

The streamlines satisfy $dx = -dy = -dz$. Thus $y + x = C_1$, $z + x = C_2$.

The streamlines are straight lines parallel to $\underline{i} - \underline{j} - \underline{k}$.