

Vector Calculus
Grad, Div and Curl

Question

Calculate **divF** and **curlF** for the vector field

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

Answer

$$\operatorname{div}\underline{F} = \frac{\partial}{\partial x}(y) + \frac{\partial}{\partial y}(x) + \frac{\partial}{\partial z}(0) = 0 + 0 = 0$$

$$\operatorname{curl}\underline{F} = \begin{vmatrix} \underline{i} & \underline{j} & \underline{k} \\ \frac{\partial}{\partial x} & \frac{\partial}{\partial y} & \frac{\partial}{\partial z} \\ y & x & 0 \end{vmatrix} = (1 - 1)\underline{k} = 0$$