

Vector Calculus
Grad, Div and Curl

Question

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

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

Answer

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

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