# Vector Calculus
## *Grad, Div and Curl*

**Question**

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

$\underline{F} = f(z)\underline{i} - f(z)\underline{j}$

**Answer**

$$\text{div}\underline{F} = \frac{\partial}{\partial x}f(z) + \frac{\partial}{\partial y}(-f(z))$$

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