

If $\mathbf{A} = 3xz^2\mathbf{i} - yz\mathbf{j} + (x + 2z)\mathbf{k}$, find $\nabla \times \mathbf{A}$. [98 屏教大光電 2(1)]

$$\text{[解]} \nabla \times \mathbf{A} = \begin{vmatrix} \mathbf{i} & \mathbf{j} & \mathbf{k} \\ \frac{\partial}{\partial x} & \frac{\partial}{\partial y} & \frac{\partial}{\partial z} \\ 3xz^2 & -yz & x + 2z \end{vmatrix} = (0\mathbf{i} + 0\mathbf{k} + 6xz\mathbf{j}) - (0\mathbf{k} - y\mathbf{i} + \mathbf{j}) = y\mathbf{i} + (6xz - 1)\mathbf{j}$$