EM1 - lec5 - Sol1

$$\nabla = \underline{i}\frac{\partial}{\partial x} + \underline{j}\frac{\partial}{\partial y} + \underline{k}\frac{\partial}{\partial z}$$

so for vector $\underline{A} = a\underline{i} + b\underline{j} + c\underline{k}$

$$\nabla \cdot \underline{A} = \frac{\partial a}{\partial x} + \frac{\partial b}{\partial y} + \frac{\partial c}{\partial z} = \text{scalar}$$

For scalar : $B = 5xy^2$

$$\nabla B = \underline{i}\frac{\partial B}{\partial x} + \underline{j}\frac{\partial B}{\partial y} + \underline{k}\frac{\partial B}{\partial z}$$

$$= \underline{i}\,5y^2 + \underline{j}\,10xy$$