

### [gex100] Tensor summation convention III

Evaluate the following partial derivatives for the case of constant  $a_{ij}$  and express the result as concisely as possible in tensor notation.

$$\frac{\partial}{\partial x_k} [a_{ij}x_j], \quad (1)$$

$$\frac{\partial}{\partial x_k} [a_{ij}x_i x_j], \quad (2)$$

$$\frac{\partial}{\partial x_k} [a_{ij}x_i y_j], \quad (3)$$

$$\frac{\partial}{\partial y_k} [a_{ij}x_i y_j], \quad (4)$$

$$\frac{\partial}{\partial x_k} [a_{ij}x_i x_j^2]. \quad (5)$$

**Solution:**