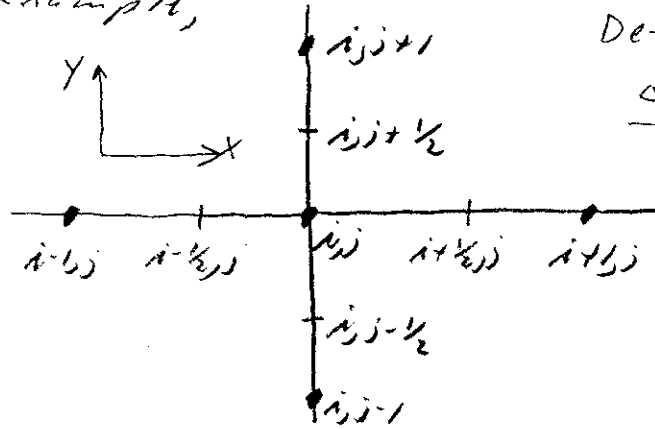


Consider the case in which we evaluate derivatives based on half-point values.

For example,



Define

$$\Delta x_i \equiv x_i - x_{i-1}$$

Develop finite difference approximations for the parameters below:

$$P_{x_{i,j}} \equiv \left(\frac{\partial P}{\partial x} \right)_{i,j} =$$

$$Q_{y_{i,j}} =$$

$$Q_{y_{i,j+1/2}} =$$

$$P_{x_{i,j}} + Q_{y_{i,j}} =$$

$$= 0 \text{ for TSD Eqn where } \begin{cases} P \equiv (1 - \nu_{po}^2) \phi'_x - (\delta + 1) \frac{\nu_{po}^2}{2} (\phi'_x)^2 \\ Q \equiv \phi'_y \end{cases}$$