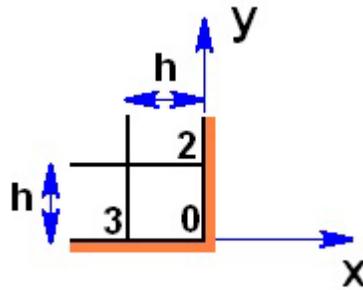


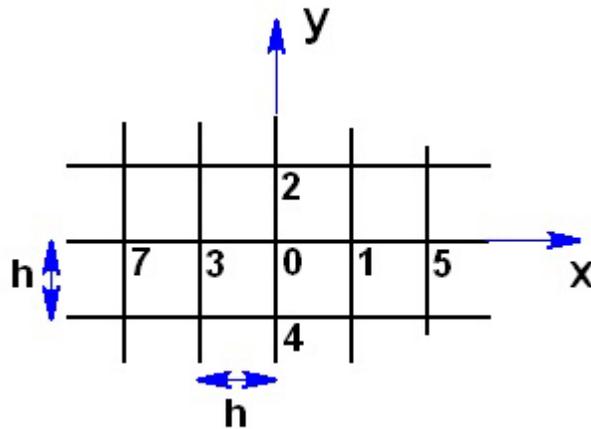
Problem 134A

A numerical solution of a potential flow is to be carried out using a uniformly spaced rectangular grid with grid spacing denoted by h .

- [a] What equation should be used to connect the velocity potentials at the nodes 0, 2 and 3 in a concave rectangular corner as follows:



- [b] Devise a more accurate finite difference approximation to the derivative, d^2f/dx^2 , when 5 nodal points (7,3,0,1,5) rather than 3 nodal points (3,0,1) are used:



- [c] If the steady, planar, incompressible and inviscid flow were that of a uniform stream around a body describe explicitly (with equations) the procedure which you would use to evaluate the pressure, $p(x, y)$, at each nodal point after the solution to the velocity potential, ϕ , had been obtained.