

Problem 116E

Consider again the planar flow of an incompressible fluid given by:

$$\psi = Axyt$$

where A is constant in time and space. Assume the flow is inviscid and that there are no body forces. Find the pressure, p , within the flow as a function of A , ρ (the fluid density), x , y and t by integrating the equations of motion. The result contains an arbitrary integration constant which could be evaluated by assuming that the pressure is known at any one point in the flow, for example at the origin.