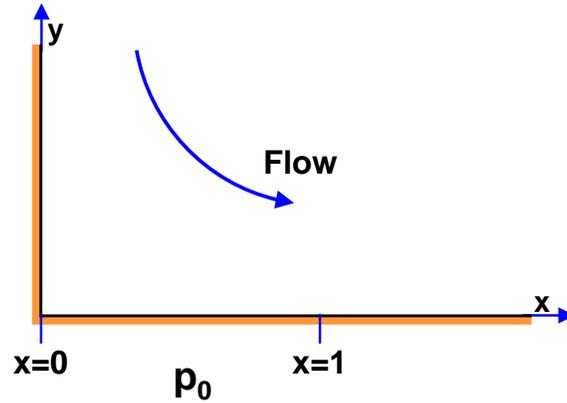


Problem 116F

Consider the steady, planar flow of an inviscid (frictionless), incompressible fluid (density ρ) in a right-angle corner as given by the streamfunction, $\psi = Axy$, where A is a constant:



- (a) Show that this flow is irrotational.
- (b) Find an expression for the pressure, p , at any point in the flow assuming that the pressure at the origin, p_0 , is known. The y -axis is vertically upward and the only body force is that due to gravity, g .
- (c) If the x -axis is a thin wall with a uniform pressure, p_0 , on its underside find the vertical force on that portion of the wall between $x = 0$ and $x = 1$. Assume unit depth perpendicular to the page.