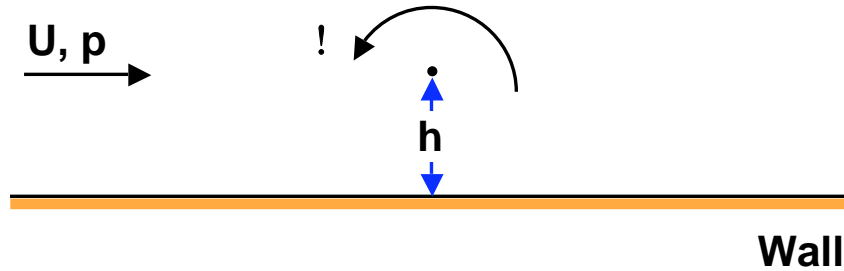


Problem 120P

A two-dimensional free vortex is located near an infinite wall at a distance h from the wall:



The velocity and pressure of the flow far from the vortex are U and p_∞ respectively. The flow is irrotational and planar and the fluid is incompressible. The strength or circulation of the vortex is Γ . Find the velocity potential for this flow and make a sketch of the streamlines and the equipotentials. Find the force on the wall per unit depth normal to the sketch if the pressure on the underside of the wall is p_∞ .