2 Static Fluids

2.1 Equation for pressure distribution in a fluid which is static in some reference frame (its "rest-frame").

2.2 Boundary condition on pressure at a density discontinuity in the absence of surface tension.

2.3 Pressure distribution in a uniform gravitational field of fluid with constant density. Manometers and barometers, forces on dams and gates, buoyancy forces on submerged and floating bodies, hot-air balloons. Stability.

2.4 Compressible fluids in static equilibrium in a uniform gravitational field. The isothermal ideal-gas model of the atmosphere; the constant-compressibility model of the ocean.

2.5 Pressure distribution in accelerating rest-frames. Liquids at rest in linearly accelerating and rotating reference frames; compressible gas centrifuges.

Read: Fay Chapt. 2, pp 44-75

Problems: Shapiro & Sonin 1.3, 1.4, 1.7, 1.8, 1.9, 1.10, 1.11, 1.18