**Equation of Continuity**

𝛿ρ/𝛿t = -(▽\*ρ**v**) = -[ρ▽**v** + v▽ρ]

▽\*ρ**v** = ▽\*ρ**v** + ρ▽**v**

𝛿ρ/𝛿t + v\*▽ρ = -ρ(▽**v**)

Dρ/Dt = -ρ(▽**v**)

**Equation of Motion**

F (generic equation)

(𝛿/𝛿t + ▽**v**)ρF

= 𝛿/𝛿t(ρF) + 𝛿/𝛿x (ρvxF) + 𝛿/𝛿y (ρvyF) + 𝛿/𝛿z (ρvzF)

= ρ[𝛿F/𝛿t + vx 𝛿/𝛿x F + vy 𝛿/𝛿y F + vz 𝛿/𝛿z F] + F [𝛿ρ/𝛿t + ρvx 𝛿/𝛿x + ρvy 𝛿/𝛿y + ρvz 𝛿/𝛿z]

= ρDF/Dt

From continuity equation: dρ/dt = -▽ρv

P Dv/Dt = -▽ρ - ▽t + ρ**g**