Newton's second law of motion:

$$\begin{aligned}\vec{F} = \begin{pmatrix}F_x\\F_y\\F_z\end{pmatrix} &= \frac{\mathrm{d}\vec{p}}{\mathrm{d}t}\\ &= \frac{\mathrm{d}}{\mathrm{d}t}(m\vec{v})\\ &= \frac{\mathrm{d}m}{\mathrm{d}t}\vec{v} + m\frac{\mathrm{d}\vec{v}}{\mathrm{d}t}\\ &= m\vec{a}\end{aligned}$$

Nabla operator:

$$\nabla := \begin{pmatrix}\partial_x\\\partial_y\\\partial_z\end{pmatrix} = \begin{pmatrix}\frac{\partial}{\partial x}\\\frac{\partial}{\partial y}\\\frac{\partial}{\partial z}\end{pmatrix}$$

Navier-Stokes equations:

$$\begin{aligned}\frac{\vec{F}}{V} &= \frac{m}{V}\vec{a}\\ &= \rho\vec{a}\\ &= \rho\frac{\mathrm{D}}{\mathrm{D}t}\vec{v}\\ &= \rho\left(\frac{\partial}{\partial t} + \vec{\nabla}\right)\vec{v}\\ &= -\nabla p + \mu\Delta\vec{v} + \rho\vec{F}\end{aligned}$$

Conservation of mass:

$$\nabla\vec{v} = 0$$