1. Ecuaciones generales

1.	Ec. cinemáticas	$\nabla\mathbf{u} = \mathbf{S} + \boldsymbol{\Omega}$ $\quad (S_{ij} = S_{ji}) \quad (\Omega_{ij} = -\Omega_{ji})$ $\nabla\cdot\mathbf{u} = S_{11} + S_{22} + S_{33}$ (expansión) $\nabla\times\mathbf{u} = -\Omega_{23}\,\hat{\mathbf{e}}_1 + \Omega_{13}\,\hat{\mathbf{e}}_2 - \Omega_{12}\,\hat{\mathbf{e}}_3$ (vorticidad)
2.	Ec. de continuidad	$\dfrac{d\rho}{dt} + \rho\,\nabla\cdot\mathbf{u} = 0$ o bien $\dfrac{\partial\rho}{\partial t} + \nabla\cdot(\rho\,\mathbf{u}) = 0$
3.	Ec. de movimiento (forma integral)	$\rho\,\dfrac{d\mathbf{u}}{dt} = \mathbf{f}_V + \nabla\cdot\mathbf{T}$ o bien $\rho\,\dfrac{\partial\mathbf{u}}{\partial t} + \rho\,(\mathbf{u}\cdot\nabla)\mathbf{u} = \mathbf{f}_V + \nabla\cdot\mathbf{T}$ $\displaystyle\int_V \rho\,\frac{d\mathbf{u}}{dt}\,dV = \int_V \mathbf{f}_V\,dV + \int_{S(V)} \mathbf{T}\cdot\hat{\mathbf{n}}\,dS$ o bien $\displaystyle\int_V \rho\,\frac{\partial\mathbf{u}}{\partial t}\,dV + \int_{S(V)} \rho\mathbf{u}(\mathbf{u}\cdot\hat{\mathbf{n}})\,dS = \int_V \mathbf{f}_V\,dV + \int_{S(V)} \mathbf{T}\cdot\hat{\mathbf{n}}\,dS$
4.	Ec. de la energía	$\rho\,\dfrac{de}{dt} = T_{ij}S_{ij} - \nabla\cdot\mathbf{q} + Q_v$

2. Casos particulares ($q = 0$, $Q_V = 0$)

1.	Campo gravitatorio	$\mathbf{f}_V = \rho\mathbf{g}$	$\Rightarrow$	$\mathbf{f}_V = -\rho\nabla\varphi$
2.	Flujo nulo (hidrostático)	$\mathbf{u} = 0$	$\Rightarrow$	$\mathbf{T} = -p\,\mathbb{I}$, $\nabla\cdot\mathbf{T} = -\nabla p = -\mathbf{f}_V$
3.	Flujo incompresible	$\nabla\cdot\mathbf{u} = 0$	$\Rightarrow$	$\mathbf{u} = \nabla\times\mathbf{A}$, $\nabla(\nabla\cdot\mathbf{A}) - \nabla^2\mathbf{A} = \boldsymbol{\omega}$
4.	Flujo incompresible-plano	$\mathbf{A} = \psi\,\hat{\mathbf{z}}$	$\Rightarrow$	$\nabla^2\psi = -\omega$
5.	Flujo irrotacional	$\nabla\times\mathbf{u} = 0$	$\Rightarrow$	$\mathbf{u} = \nabla\phi$, $\nabla^2\phi = S_{11} + S_{22} + S_{33}$
6.	Flujo irrotacional-plano	$\phi(x_1, x_2)$	$\Rightarrow$	$\nabla^2\phi = S_{11} + S_{22}$
7.	Flujo irrot-incomp-plano	(4-6)	$\Rightarrow$	$\nabla^2\phi = 0$, $\nabla^2\psi = 0$
8.	Fluido ideal	$\mathbf{T} = -p\,\mathbb{I}$	$\Rightarrow$	$\nabla\cdot\mathbf{T} = -\nabla p$
	si es barotrópico	$\rho = f(p)$	$\Rightarrow$	$\nabla p = \rho\,\nabla\mathcal{P}$
	además uniforme	$\rho = \rho_0$	$\Rightarrow$	$\nabla(p/\rho_0) = \nabla\mathcal{P}$
	no-estacionario	$\mathbf{u}(\mathbf{x}, \mathbf{t})$	$\Rightarrow$	$\partial_t\mathbf{u} + \nabla(\mathcal{P} + u^2/2) + \boldsymbol{\omega}\times\mathbf{u} = \mathbf{f}_V/\rho_0$
	e irrotacional		$\Rightarrow$	$\nabla(\partial_t\phi + \mathcal{P} + u^2/2) = \mathbf{f}_V/\rho_0$
	y gravitatorio		$\Rightarrow$	$\nabla(\partial_t\phi + \mathcal{P} + \varphi + u^2/2) = 0$
	estacionario	$\mathbf{u} = \mathbf{u}(\mathbf{x})$	$\Rightarrow$	$\nabla(\mathcal{P} + u^2/2) + \boldsymbol{\omega}\times\mathbf{u} = \mathbf{f}_V/\rho_0$
	incompresible	$\nabla\cdot\mathbf{u} = 0$		$\mathbf{u}\cdot\nabla(\mathcal{P} + u^2/2) = \mathbf{u}\cdot\mathbf{f}_V/\rho_0$
	y gravitatorio		$\Rightarrow$	$\mathbf{u}\cdot\nabla(\mathcal{P} + \varphi + u^2/2) = 0$