$$\frac{\partial \rho}{\partial t} + \boldsymbol{\nabla} \cdot (\rho \boldsymbol{v}) = 0. \tag{1}$$

$$\frac{D}{Dt} = \frac{\partial}{\partial t} + \boldsymbol{v} \cdot \boldsymbol{\nabla}. \tag{2}$$

$$\boldsymbol{v} = (\boldsymbol{\nabla}\psi) \times \boldsymbol{k}. \tag{3}$$

$$dF_i = \sigma_{ij} dS_j, \tag{4}$$

$$\sigma_{ij} = -p\delta_{ij} + \sigma'_{ij} \tag{5}$$

$$\sigma'_{ij} = \mu \left(\frac{\partial v_i}{\partial x_j} + \frac{\partial v_j}{\partial x_i} - \frac{2}{3} \frac{\partial v_k}{\partial x_k} \delta_{ij} \right) + K \delta_{ij} \frac{\partial v_k}{\partial x_k}, \tag{6}$$

$$\rho \frac{D\boldsymbol{v}}{Dt} = \rho \boldsymbol{f} - \boldsymbol{\nabla} p + \mu \nabla^2 \boldsymbol{v} + \left(K + \tfrac{1}{3}\mu \right) \boldsymbol{\nabla}\boldsymbol{\nabla} \cdot \boldsymbol{v}. \tag{7}$$

$$\left(\frac{D\boldsymbol{v}_\mathrm{i}}{Dt} \right)_\mathrm{i} = \left(\frac{D\boldsymbol{v}_\mathrm{r}}{Dt} \right)_\mathrm{r} + 2\boldsymbol{\Omega} \times \boldsymbol{v}_\mathrm{r} + \boldsymbol{\Omega} \times (\boldsymbol{\Omega} \times \boldsymbol{r}), \tag{8}$$

$$\boldsymbol{f} = -\boldsymbol{\nabla}\Phi$$

$$\boldsymbol{v} = \boldsymbol{\nabla}\phi. \tag{9}$$

$$\Gamma = \oint \boldsymbol{v} \cdot d\boldsymbol{r}. \tag{10}$$

$$\boldsymbol{s} \cdot \boldsymbol{\nabla}(\frac{1}{2}v^2 + \Phi + \frac{p}{\rho}) = 0, \qquad \frac{\partial \phi}{\partial t} + \frac{1}{2}v^2 + \Phi + \frac{p}{\rho} = f(t). \tag{11}$$

$$p = k\rho^\gamma, \qquad \frac{\partial^2 f}{\partial^2 t} - c^2 \nabla^2 f = 0, \qquad v_g = \frac{d\omega}{dk}. \tag{12}$$

Sylinterikoordinaatit $\boldsymbol{r} = r\cos\theta\,\boldsymbol{i} + r\sin\theta\,\boldsymbol{j} + z\boldsymbol{k}$:

$$\boldsymbol{\nabla}\Phi = \hat{\boldsymbol{r}} \frac{\partial \Phi}{\partial r} + \hat{\boldsymbol{\theta}} \frac{1}{r} \frac{\partial \Phi}{\partial \theta} + \hat{\boldsymbol{z}} \frac{\partial \Phi}{\partial z} \tag{13}$$

$$\boldsymbol{\nabla} \cdot \boldsymbol{A} = \frac{1}{r} \frac{\partial (r A_r)}{\partial r} + \frac{1}{r} \frac{\partial A_\theta}{\partial \theta} + \frac{\partial A_z}{\partial z} \tag{14}$$

$$\boldsymbol{\nabla} \times \boldsymbol{A} = \hat{\boldsymbol{r}} \left(\frac{1}{r} \frac{\partial A_z}{\partial \theta} - \frac{\partial A_\theta}{\partial z} \right) + \hat{\boldsymbol{\theta}} \left(\frac{\partial A_r}{\partial z} - \frac{\partial A_z}{\partial r} \right) + \hat{\boldsymbol{z}} \frac{1}{r} \left(\frac{\partial (r A_\theta)}{\partial r} - \frac{\partial A_r}{\partial \theta} \right) \tag{15}$$

$$\nabla^2 \Phi = \frac{1}{r} \frac{\partial}{\partial r} \left(r \frac{\partial \Phi}{\partial r} \right) + \frac{1}{r^2} \frac{\partial^2 \Phi}{\partial \theta^2} + \frac{\partial^2 \Phi}{\partial z^2} \tag{16}$$

$$\int_S \boldsymbol{A} \cdot d\boldsymbol{S} = \int_V \boldsymbol{\nabla} \cdot \boldsymbol{A}\, dV, \qquad \oint_l \boldsymbol{A} \cdot d\boldsymbol{l} = \int_S \boldsymbol{\nabla} \times \boldsymbol{A} \cdot d\boldsymbol{S}, \tag{17}$$

aine	ρ (kg/m^3)	μ [kg/(m s)]	ν (m^2/s)
ilma	1,2	1.8×10^{-5}	1.5×10^{-5}
vesi	999	1.1×10^{-3}	1.1×10^{-6}
elohopea	13610	1.6×10^{-3}	1.2×10^{-7}
oliiviöljy	918	0.10	1.1×10^{-4}
glyseriini	1260	2.33	1.8×10^{-3}