$$\frac{\partial \boldsymbol{u}}{\partial t} + (\boldsymbol{u} \cdot \nabla)\boldsymbol{u} + f\hat{\boldsymbol{k}} \times \boldsymbol{u} = -\frac{1}{\rho}\nabla p$$

$$\nabla \cdot \boldsymbol{u} = 0$$