FORMULAS:

$$f_y - \frac{d}{dx} f_{y'} = 0$$

$$f - y' f_{y'} = C$$

$$L = T - V$$

$$L_{q_i} - \frac{d}{dt} L_{\dot{q}_i} = 0, \quad i = 1, \dots, N$$

$$L - \sum_{i=1}^{N} \dot{q}_i L_{\dot{q}_i} = C$$

$$\int_{\partial \Omega} G \, dy - F \, dx = \int \int_{\Omega} \left(\frac{\partial F}{\partial y} + \frac{\partial G}{\partial x} \right) dx \, dy$$

$$\int_{\partial \Omega} \mathbf{v} \cdot \mathbf{n} \, dS = \int_{\Omega} \nabla \cdot \mathbf{v} \, dV$$

$$\frac{\partial f}{\partial w}(w, \nabla w) - \sum_{i=1}^{3} \frac{\partial}{\partial x_i} \left(\frac{\partial f}{\partial w_i}(w, \nabla w) \right) = 0$$