

$$\underbrace{e^{\sigma}}_{M(t,y)} + \underbrace{(t \cdot e^{\sigma} - 2y)}_{N(t,y)} \cdot y' = 0, \quad y(1) = 0$$

$$M \in C(\mathbb{R}^2), N \in C(\mathbb{R}^2)$$

$$\frac{\partial V(t,y)}{\partial t} = e^{\sigma} \Rightarrow V(t,y) = t \cdot e^{\sigma} + \chi(y)$$

$$\frac{\partial V(t,y)}{\partial y} = t \cdot e^{\sigma} + \chi'(y) = t \cdot e^{\sigma} - 2y \Rightarrow \chi'(y) = -2y$$

$$\chi(y) = -y^2, \quad t \, dy \quad V(t,y) = t \cdot e^{\sigma} - y^2$$

$$\varphi: y = \varphi(t) \quad t \cdot e^{\sigma} - y^2 = 1, \quad y(1) = 0.$$