(1) $2ty + (1+t^2)\cdot y' = 0$, (2) $y(1) = 6$

$M(t,y) = 2ty$, $\quad N(t,y) = 1+t^2$

$\Omega = \mathbb{R}^2$, $M \in C(\Omega)$, $N \in C(\Omega)$. $\forall (t,y) \in \Omega : 1+t^2 > 0$

$$\frac{\partial M(t,y)}{\partial y} = 2t = \frac{\partial N(t,y)}{\partial t}.$$

$$\frac{\partial V(t,y)}{\partial t} = 2ty, \quad \frac{\partial V(t,y)}{\partial y} = 1+t^2$$

$\Downarrow$

$$V(t,y) = t^2 \cdot y + \mathcal{X}(y)$$

$$\frac{\partial V(t,y)}{\partial y} = t^2 + \mathcal{X}'(y) = 1+t^2 \Rightarrow \mathcal{X}'(y) = 1,$$

tedy např. $\mathcal{X}(y) = y$. Odtud

$$V(t,y) = t^2 y + y = (t^2+1)\cdot y$$

φ: $(t^2+1)\cdot y = 12$, $y(1) = 6$

$$\varphi: \quad y = \frac{12}{t^2+1}.$$