$3e^{3y} \cdot y' = 2t$, $\quad y(0) = 1$.

$g(y) \cdot y' = h(t)$,

kde $\quad g(y) = 3 \cdot e^{3y}$, $\quad h(t) = 2t$

$g \in C(\mathbb{R})$, $\; h \in C(\mathbb{R})$ $\quad \forall y \in \mathbb{R}: g(y) > 0$.

$\exists!$ max. řešení φ zadané úlohy

$G(y) = \int 3e^{3y} dy = e^{3y}$,

$H(t) = \int 2t\,dt = t^2$

$$G(y) = H(t) + C, \quad C \in \mathbb{R}$$

$e^{3y} = t^2 + C$, $\quad C \in \mathbb{R}$

$y(0) = 1 \Rightarrow e^{3 \cdot 1} = 0^2 + C \Rightarrow C = e^3$

$$e^{3\varphi(t)} = t^2 + e^3 \Rightarrow 3\varphi(t) = \ln(t^2 + e^3)$$

$\Rightarrow \varphi(t) = \frac{1}{3} \ln(t^2 + e^3) \Rightarrow \underline{\underline{\varphi(t) = \ln \sqrt[3]{t^2 + e^3}}}$

Formálně: $\quad 3 \cdot e^{3y} \cdot y' = 2t$

$$3 \cdot e^{3y} \cdot \frac{dy}{dt} = 2t \quad \Big| \, dt$$

$3 \cdot e^{3y} dy = 2t\,dt \qquad \int 3 \cdot e^{3y} dy = \int 2t\,dt$

$e^{3y} = t^2 + C$, $\; C \in \mathbb{R}$.