

$$\begin{aligned}
& \mu(t)' = \mu(t)p(t) \\
\equiv & \\
& \frac{\mu(t)'}{\mu(t)} = p(t) \\
\equiv & \\
& \int_{t_0}^t \frac{\mu(s)'}{\mu(s)} = \int_{t_0}^t p(s) \\
\equiv & \\
& \int_{t_0}^t [\ln(\mu(s))]' ds = \int_{t_0}^t p(s) \\
\equiv & \\
& \ln(\mu(t)) = \int_{t_0}^t p(s) \\
\equiv & \\
& \mu(t) = e^{\int_{t_0}^t p(s) ds}
\end{aligned}$$