As is

Now let us solve the linear population growth model in equation **??**: $\dot{x} = rx$. The equation can be solved by first dividing both sides by x and then integrating:

$$\int \frac{1}{x}\frac{dx}{dt}dt = \int \frac{dx}{x} = \int r dt \Longrightarrow \log|x| = rt + C \Longrightarrow x = e^{rt+C} = Ae^{rt}$$

Easier to follow

$$\begin{aligned}
\dot{x} &= rx \\
\int \left(\frac{1}{x}\right)\frac{dx}{dt}dt &= \int \left(\frac{1}{x}\right) xr \; dt \\
\int \frac{1}{x}dx &= \int r \; dt \\
\log|x| &= rt + C \\
x &= e^{rt+C} \\
&= Ae^{rt} \quad \square
\end{aligned}$$