MATH 246 Groupwork 3.1
Name:

1. Show that the pair $x_{1}(t)=e^{2 t}$ and $x_{2}(t)=3 e^{2 t}$ form a solution to the initial value problem:

$$
\begin{aligned}
& x_{1}^{\prime}=-x_{1}+x_{2} \\
& x_{2}^{\prime}=3 x_{1}+x_{2}
\end{aligned}
$$

with $x_{1}(0)=1$ and $x_{2}(0)=3$.
2. Rewrite $y^{\prime \prime}+2 t y^{\prime}-5 y=e^{t}$ with $y(0)=-1$ and $y^{\prime}(0)=2$ as a first-order system with an initial value.
3. Write down the system of differential equations corresponding to the following two tanks.


