6. (30 points) Show how the following molecules can be synthesized from the indicated starting material and any needed inorganic reagents even if they contains carbons (e.g., Na$_2$CO$_3$). You can also use any organic reagents provided none of their carbon atoms are incorporated into the compound.

a) 

\[
\begin{align*}
\text{benzene} \\
\end{align*}
\]