1. Give the complete name for the following molecule:

```
\begin{center}
\includegraphics[width=0.5\textwidth]{molecule.png}
\end{center}
```

Name: ___________________________________________

2. Plot the relative energies of the $\pi$-molecular orbitals for the following molecule, label each orbital as bonding, non-bonding, or anti-bonding, and fill the orbitals with the appropriate number of electrons. Finally, determine if the compound is aromatic or anti-aromatic (this molecule is completely planar).

```
\begin{center}
\includegraphics[width=0.5\textwidth]{molecule2.png}
\end{center}
```

3. Draw the mechanism for the following reaction. You do not need to show how the electrophile is formed, but you should include the active electrophile in the mechanism.

```
\begin{center}
\includegraphics[width=0.5\textwidth]{reaction.png}
\end{center}
```