Problem Set #6 Solutions

1. This is an electrophilic aromatic substitution reaction. The electrophile is the benzene diazonium salt (2); the nucleophile is the aromatic system of naphthol (1).

\[
\begin{align*}
\text{[Diagram]} & \\
1 & \rightarrow & 2 & \rightarrow & 3 \\
& & \text{draw resonance structures}
\end{align*}
\]

2. In the presence of KNH₂ in liquid ammonia, the chlorobenzenes will undergo nucleophilic aromatic substitution via the elimination-addition mechanism: a benzene IM is involved here.

Consider the possible benzene IM's for each of 4, 5, and 6; how these benzene IM's will react to give aniline products.

(next page)
4: Only one benzene isomer, but two different ways for amide to attack it:

5: Two possible benzenes; each can undergo addition in two different ways:

6: Only one benzene, but two different ways for amide to attack: