Week 5 Practice Problems

1. Draw the product for the reaction below and propose a mechanism. Include all reacting lone pairs, charges and curvy arrows. Do not combine two steps in one.

\[
\text{OH} \quad \xrightarrow{1. \text{SOCl}_2, \text{pyridine}} \quad \xrightarrow{2. \text{KOC(CH}_3)_3} \quad \text{product}
\]

2. Predict the products and/or provide the reagents for the following reactions. Include all products and indicate the major product(s) and stereochemistry where necessary.

a. 

\[
\text{H}_2\text{SO}_4 \quad \xrightarrow{\text{NaSH, H}_2\text{O}}
\]
b. 

\[
\begin{align*}
\text{PBr}_3 \quad \text{Pyridine} \\
\text{HO} \\
\end{align*}
\]

1. TosCl \quad \text{Pyridine} \\
2. NaI \\

\[
\begin{align*}
\text{NaOH} \\
\text{c.} \\
\end{align*}
\]

\[
\begin{align*}
\text{SOCl}_2 \quad \text{Pyridine} \\
\text{H}_2\text{SO}_4 \\
\text{OH} \\
\end{align*}
\]
3. Provide the mechanism for the following reagent. Include all reacting lone pairs, charges and curvy arrows. Do not combine two steps in one.