1. In class we talked about the mechanism for sulfonation. Provide the mechanism for the reverse process as shown by the reaction scheme below. (4 points)

Dilute
$$H_2SO_4$$

$$H_2O$$

$$+SO_3$$

$$H \longrightarrow H_2O$$

$$H_2O$$

2. Complete the synthesis below by providing either the required reagents, intermediate or final product. Then in the box underneath, answer which of the 3 reactions would be the fastest in relation to each other. (6 points)