1.) Draw a reaction energy diagram for a two-step reaction whose second step is faster than the first step. Label the parts of the diagram corresponding to reactants, products, activation energy, transition states and overall energy change.

![Reaction energy diagram](image)

2.) Write the products of the following reaction.

- \( \text{Catalyst} \quad \text{H}_2 \quad \text{H}_2 \quad \text{H} \quad \text{H} \)
- \( \text{Br}_2 \quad \text{H} \quad \text{Br} \quad \text{Br} \)
- \( \text{H}_2\text{O} \quad \text{H}^+ \quad \text{OH} \)