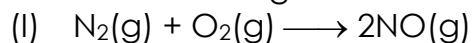
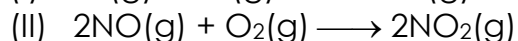


Enthalpy Change Cycle

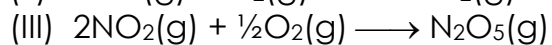
1. Consider the following reactions:



$$\Delta H_1^\ominus = +180.0 \text{ kJ mol}^{-1}$$



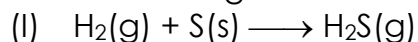
$$\Delta H_2^\ominus = -114.0 \text{ kJ mol}^{-1}$$



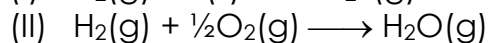
$$\Delta H_3^\ominus = -55.0 \text{ kJ mol}^{-1}$$

Construct an enthalpy change cycle to determine the standard enthalpy change of formation of $\text{N}_2\text{O}_5(\text{g})$.

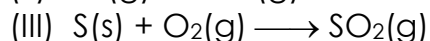
2. Given the following data:



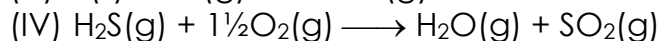
$$\Delta H_1^\ominus = -20.6 \text{ kJ mol}^{-1}$$



$$\Delta H_2^\ominus = -242 \text{ kJ mol}^{-1}$$



$$\Delta H_3^\ominus = -297 \text{ kJ mol}^{-1}$$



$$\Delta H_4^\ominus = x \text{ kJ mol}^{-1}$$

Construct an enthalpy change cycle to calculate x.