

ΧΗΜΙΚΗ ΘΕΡΜΟΔΥΝΑΜΙΚΗ - ΛΥΣΕΙΣ

1) 
$$\Delta H^{\circ} = 4 \Delta H_{f, HNO_3(l)}^{\circ} - 2 \Delta H_{f, H_2O(l)}^{\circ} - 4 \Delta H_{f, NO_2(g)}^{\circ} - \cancel{\Delta H_{f, O_2}^{\circ}} =$$
$$= 4 \text{ mol} \cdot (-173,2 \text{ kJ} \cdot \text{mol}^{-1}) - 2 \text{ mol} \cdot (-285,9 \text{ kJ} \cdot \text{mol}^{-1}) -$$
$$- 4 \text{ mol} (33,2 \text{ kJ} \cdot \text{mol}^{-1}) = -253,8 \text{ kJ}.$$

2) 
$$\Delta G^{\circ} = 2 \Delta G_{f, SO_2(g)}^{\circ} + \cancel{\Delta G_{f, O_2(g)}^{\circ}} - 2 \Delta G_{f, SO_3(g)}^{\circ} =$$
$$= 2 \cdot \text{mol} (-300 \text{ kJ} \cdot \text{mol}^{-1}) - 2 \cdot (-370 \text{ kJ} \cdot \text{mol}^{-1}) =$$
$$= +140 \text{ kJ} > 0 \Rightarrow \text{δεν είναι αυθόρμητη}$$