Name: *Kay* (signature)

Homework Quiz

Show ALL work
Write your final answer in the box, with correct significant digits and units

1. Use Hess's Law to determine the enthalpy change for the reaction: $2 NO_2 (g) \rightarrow 2 NO (g) + O_2 (g)$

   Use the following known equations:

   (1) $O_2 (g) \rightarrow 2 O (g)$ $\qquad \Delta H = +495 \text{ kJ}$

   (2) $[NO (g) + O_3 (g) \rightarrow NO_2 (g) + O_2 (g) \Delta H = -199 \text{ kJ}] \times -2$

   (3) $2 O_3 (g) \rightarrow 3 O_2 (g)$ $\qquad \Delta H = -427 \text{ kJ}$

   $\boxed{\Delta H = -29 \text{ kJ}}$

   $\underline{\Delta H}$

   $2 NO_2 + 2O_2 \rightarrow 2NO + 2O_3 \qquad 398 \text{ kJ}$

   $\qquad 2O_3 \rightarrow 3O_2 + O_2 \qquad -427 \text{ kJ}$

   _____

   $2 NO_2 \qquad \rightarrow 2NO + O_2 \qquad -29 \text{ kJ}$
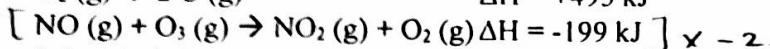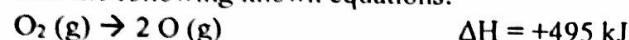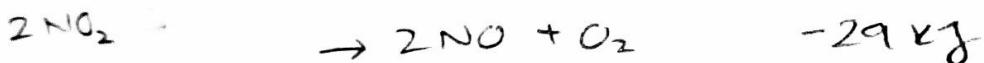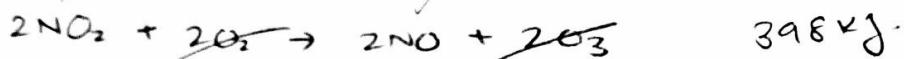
2. Calculate $\Delta H°$ for the reaction represented by the equation:
   $2 H_2O (l) \rightarrow 2 H_2 (g) + O_2 (g)$.

   $\boxed{\Delta H° = 571.6 \text{ kJ}}$

   The standard enthalpy of formation for liquid water is -285.8 kJ/mol.

   $\Delta H° = [\Delta H\text{'s prod}] - [\Delta H\text{'s react}]$

   $= [2(0) + 1(0)] - [2(-285.8 \text{ kJ/mol})]$

   $= 0 + 571.6 \text{ kJ}$

   $\Delta H° = 571.6 \text{ kJ}$