Name: **Period:**   **Seat#:**

Try these problems. If you can DO them, check the box ($\checkmark$). If you CANNOT do them, write some notes TO YOURSELF about what you need to study to succeed at these problems.

☐ **Reaction Mechanisms:**
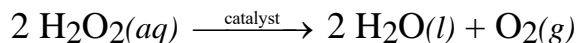   The following mechanism is proposed for a reaction:
$$\text{i. } NO_2 + F_2 \rightarrow NO_2F + F \text{ (slow)}$$
$$\text{ii. } NO_2 + F \rightarrow NO_2F \text{ (fast)}$$
    Write the equation for the overall reaction.
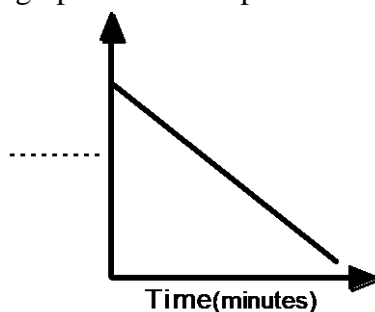
☐ **Rate Laws:**
    Write the rate law for the above mechanism.

☐ **Graphical Methods:**
    The catalyzed decomposition of hydrogen peroxide, H_2O_2 is studied and found to be first order with respect to H_2O_2.

$$2\ H_2O_2(aq) \xrightarrow{\text{catalyst}} 2\ H_2O(l) + O_2(g)$$

    During the analysis of the data, the graph below was produced.

Time(minutes)

(i)   Label the vertical axis of the graph

(ii) On the graph, draw the line that represents the plot of the uncatalyzed first-order decomposition of $H_2O_2(aq)$.