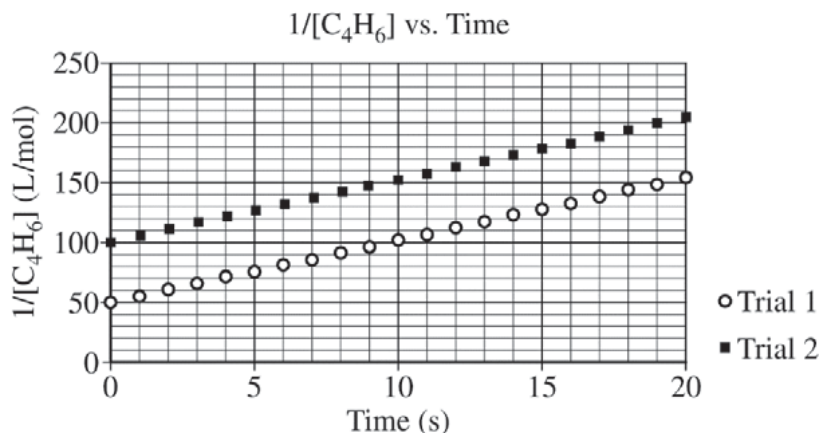
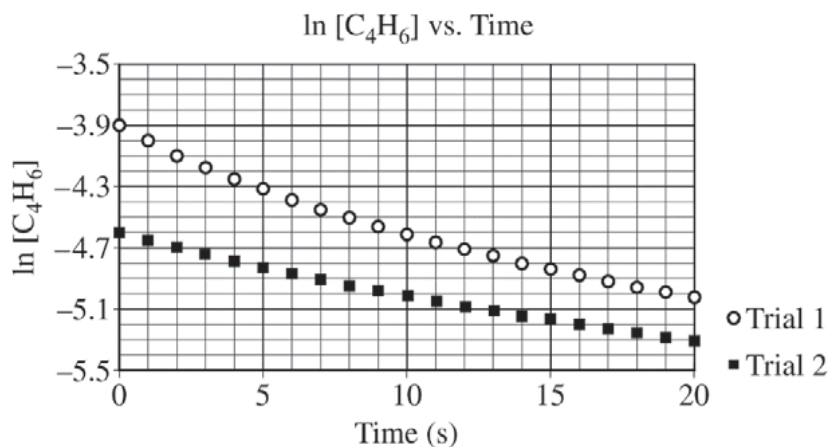
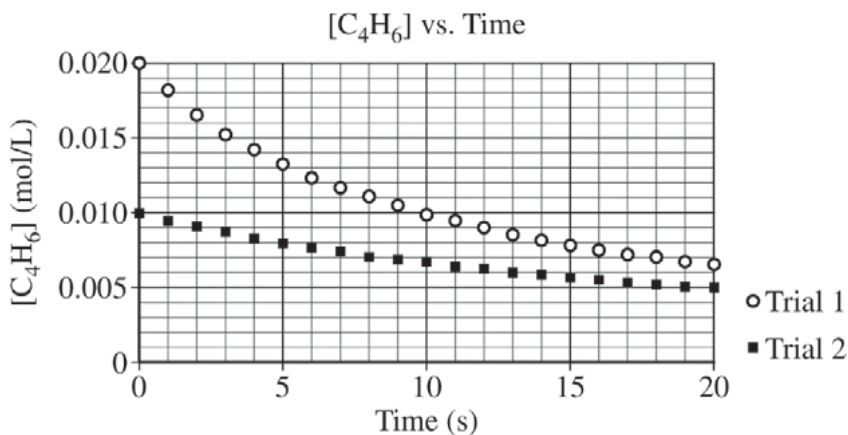


5. At high temperatures the compound C_4H_6 (1,3-butadiene) reacts according to the equation above. The rate of the reaction was studied at 625 K in a rigid reaction vessel. Two different trials, each with a different starting concentration, were carried out. The data were plotted in three different ways, as shown below.



- For trial 1, calculate the initial pressure, in atm, in the vessel at 625 K. Assume that initially all the gas present in the vessel is C_4H_6 .
- Use the data plotted in the graphs to determine the order of the reaction with respect to C_4H_6 .
- The initial rate of the reaction in trial 1 is $0.0010 \text{ mol}/(\text{L} \cdot \text{s})$. Calculate the rate constant, k , for the reaction at 625 K.