

**EVE 403**  
**Atmospheric Chemistry**  
Homework #5  
Spring 2020

**Due: 18 March, 2020**

1. The concentrations over time of species X are shown below. Determine the order of the associated reaction and the reaction rate constant (k). State all assumptions.

$$[X]_0 = 500 \text{ molecules/cm}^3$$

$$[X]_{t=1s} = 488 \text{ molec/cm}^3$$

$$[X]_{t=50s} = 344 \text{ molec/cm}^3$$

$$[X]_{t=100s} = 126 \text{ molec/cm}^3$$

$$[X]_{t=150s} = 25 \text{ molec/cm}^3$$

$$[X]_{t=200s} = 2.6 \text{ molec/cm}^3$$

$$[X]_{t=250s} = 0.15 \text{ molec/cm}^3$$

3. Provide kinetic rate expressions for the shaded species.

