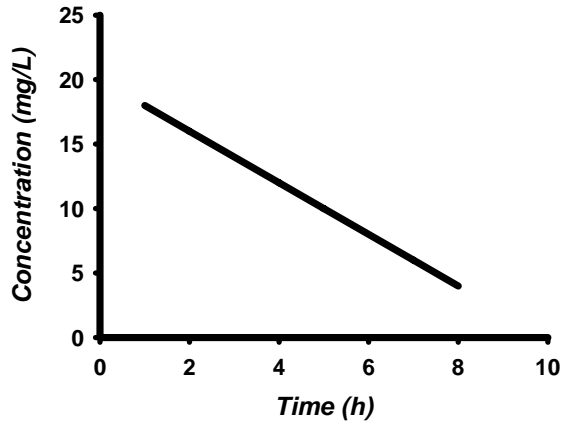
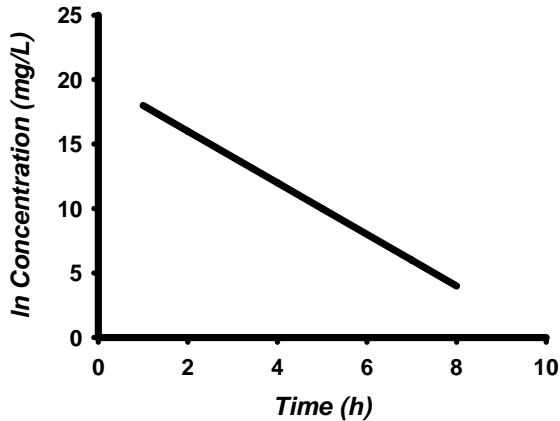


**PHA 5127 – Fall 2006**  
**Homework #1**

1. Identify which of the graphs below exhibit zero-order and first order kinetics. For which elimination is the half-life ( $t_{1/2}$ ) dependent on the concentration? Write the equations and give explanations.



2. Fractions and amounts of drugs eliminated through zero and first order kinetics  
2a. Do fraction and amount of a drug eliminated through zero order kinetics change? Please, mark the right answer.

- Fraction changes, amount stays constant
- Fraction stays constant, amount stays constant
- Fraction changes, amount changes
- Fraction stays constant, amount changes

2b. Do fraction and amount of a drug eliminated through first order kinetics change? Please, mark the right answer.

- Fraction changes, amount stays constant
- Fraction stays constant, amount stays constant
- Fraction changes, amount changes
- Fraction stays constant, amount changes

3. Drug A is given to Mr. Guinea Pig as an i.v. bolus and distributes very rapidly throughout his entire body, resulting in the following concentration-time profile. Please determine the half-life ( $t_{1/2}$ ) and the area under the concentration-time curve from time zero to infinity ( $AUC_{0 \rightarrow \infty}$ ) of that particular drug. Hint: Use the trapezoidal rule for the AUC calculation.

<b>Time (h)</b>	<b>Conc. (mg/L)</b>
0	99.9
1	51.3
2	25.7
3	13.1
5	3.3

**4.** Additionally Mr. Guinea Pig receives drug B that is also given as an iv. bolus. It is known that drug B slows that elimination process of drug A down. How will the elimination rate constant ( $k_e$ ) and half-life ( $t_{1/2}$ ) of drug A change? Answer briefly!