Your Name: **SCORE:** **/10**

INSTRUCTIONS: Answer the following short-answer questions (in 10 minutes).
GOAL: This reading quiz is designed to illuminate your understanding of the concepts in Chapter 2 of the book: Modeling Using Systems of ODEs, Geometry of Systems of ODEs, Analytic Methods for Special Systems, Euler's Method for Systems.

1. (*2 points.*) What is an equilibrium solution for a system of differential equations $\frac{d\vec{x}}{dt} = \vec{F}(\vec{x})$ and how does it differ (geometrically) from an equilibrium solution for a differential equation, $y' = f(y)$?

2. (*2 points.)* What are two equilibrium solutions for the standard Lotka-Volterra predator-prey model discussed in your text? What is the physical interpretation of these equilibria?

3. (*2 points.)* Explain in your own words what the difference between coupled and decoupled systems of equations are. Give an example of each type.

4. (*2 points.)* Which are generally easier to solve, coupled systems of equations or decoupled systems of equations? EXPLAIN YOUR ANSWER.

5. (*2 points.)* **TRUE or FALSE:** "Euler's Method can never be used to approximate solutions to a second-order nonlinear ordinary differential equation." EXPLAIN YOUR ANSWER.

BONUS (*2 points.)* Discuss your feeling about the textbook, *Blanchard, Devaney & Hall.* On a scale of 1 to 10, what would you rate the textbook in **clarity**, **usefulness** and **quality**?