

AM 250 Assignment 3 Due Wednesday, January 25

Linear, First Order Differential Equations

Course Notes references: pp. 11-15 (theory); pp. 2, 22-25 (applications)

- Do the following problems from page 137 the Course Notes:

2(vi)(a); 2(vii)(a),(b); 4.(iii);

1. Solve following initial value problem. Sketch the graph of your solution.

$$x \frac{dy}{dx} = x - (1 + x)y, \quad y(1) = 0$$

2. Use the qualitative method of analysis to sketch the solutions of the following equation

$$\frac{dy}{dx} = y^2(4 - y^2).$$

Find the equilibrium solutions and state whether they are stable, or unstable.

- Do the following problems from pages 139–140 of the Course Notes:
9; 13; 14