MATH 502, HOMEWORK ASSIGNMENTS

HAITAO FAN

ABSTRACT. HWK is assigned by the dates of the class. It is assigned typically on the day on or before the Tue of each week. It is due by 11:59pm of the following Friday. I will try to grade it by the following Monday.

Each problem is worth 2 points. Get 1 point if there is a minor mistake, 0 for major mistake.

1. HWK FOR WEEK 1

Hwk 1.1 Write the following system of eqs in matrix form.

$$(1.1) \qquad \begin{cases} x_1 - 3x_2 + 2x_3 = 1, \\ 3x_1 - 2x_2 + 4_3 = 2, \\ 4x_1 + 2x_2 - 2x_3 = 3. \end{cases}$$

Hwk 1.2 Write the matrix equation

$$(1.2) \qquad \begin{bmatrix} 3 & 2 & 1 \\ 1 & -1 & 2 \\ -2 & 3 & 5 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 3 \\ 2 \\ 1 \end{bmatrix}.$$

back to a system of individual eqs.

Hwk 1.3: Hwk problem 1.3 on the Page 7 of Chapter 1 under the Modules link of Canvas.

Hwk 1.4. Problems of 1, 3, 5 of Homework 2.1 and 2.2 on page 5 Chapter 2 under the Modules link of Canvas.

Date: January 13, 2022.

Hwk 1.5. Based on the geometric meaning of the ODE, roughly sketch solutions of

$$y' = \frac{x^2 - 1}{y^2 + 1}$$

over the interval $0 \leq x \leq 2$ with the following initial point.

a) $y(0) = 1$.

b) $y(0) = -1$.

Use at least steps (in x) to reach $x = 2$.

Department of Mathematics, Georgetown University, Washington, DC 20057, USA

Email address: fanh@georgetown.edu