MATH 240 ASSIGNMENT 10, SPRING 2018

Due in class on Friday, April 6

Part 1. Read DELA 9.1–9.5, 9.8

Part 2. Problems from old final exams.

- Fall 2015 final exam, problem 8.

- Fall 2014 final exam, problem 11.

- Fall 2013 final exam, problem 7.

- Spring 2013 final exam, problem 6.

- Fall 2012 makeup final, problem 10.

- Fall 2012 final exam, problem 10.

- Spring 2011 final exam, problem 7.

- Spring 2011 final exam, problem 9.

- Spring 2010 final exam, problem 5.

Part 3. Let A be the following 4×4 matrix

$$\begin{pmatrix} 0 & -1 & 0 & 0 \\ 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & -1 \\ 0 & 0 & 1 & 0 \end{pmatrix}$$

(i) Find the general solution of the system of differential equation

$$\frac{d}{dt}\vec{x}(t) = A \cdot \vec{x}(t)$$

(ii) Determine all solutions $\vec{x}(t)$ such that $\vec{x}(t)$ remains bounded as $t \to \infty$.