

## Exam 2 Review

Supplemental Instruction  
Iowa State University

Leader: Kim C.

Course: Math 267

Instructor: Dr. D'Alessandro

Date: 10/17/17

---

1. Find the general solution of the system

$$\frac{d}{dt}\vec{x} = A\vec{x}$$

where  $A$  is the matrix

$$A = \begin{pmatrix} 1 & 2 \\ 4 & 3 \end{pmatrix}$$

Is the point  $\begin{pmatrix} 0 \\ 0 \end{pmatrix}$  a stable or unstable equilibrium point for the given system? Why?

2. Find the general solution of the system

$$\frac{d}{dt}\vec{x} = A\vec{x}$$

where  $A$  is the matrix

$$A = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 2 & -1 \\ 0 & 1 & 0 \end{pmatrix}$$

Is the point  $\begin{pmatrix} 0 \\ 0 \end{pmatrix}$  a stable or unstable equilibrium point for the given system? Why?

3. Find the general solution of the system

$$\frac{d}{dt}\vec{x} = A\vec{x}$$

where  $A$  is the matrix

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