

# Spring 2018 Welcome

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Eligibility/ALEKS – eigenvalues: real with same sign.

Accommodations – eigenvalues: real with opposite sign.

Email – eigenvalues: complex conjugates.

Grade Distributions – deficient eigenvectors

$$A \begin{bmatrix} | & | \\ \mathbf{e}_1 & \mathbf{e}_2 \\ | & | \end{bmatrix} = \begin{bmatrix} | & | \\ \lambda_1 \mathbf{e}_1 & \lambda_2 \mathbf{e}_2 \\ | & | \end{bmatrix} = \begin{bmatrix} | & | \\ \mathbf{e}_1 & \mathbf{e}_2 \\ | & | \end{bmatrix} \begin{bmatrix} \lambda_1 & 0 \\ 0 & \lambda_2 \end{bmatrix}$$

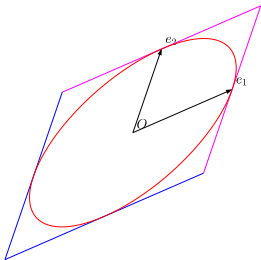
$$AP = PD \text{ or } A = PDP^{-1}$$

# Commuting Diagram

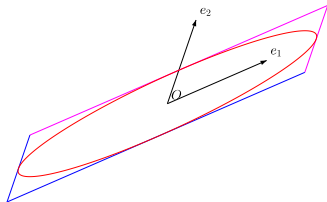
$$\begin{array}{ccc} \mathbb{R}^2 & \xrightarrow{P^{-1}} & \mathbb{R}^2 \\ \downarrow A & & \downarrow D \\ \mathbb{R}^2 & \xleftarrow{P} & \mathbb{R}^2 \end{array}$$

# Graphically

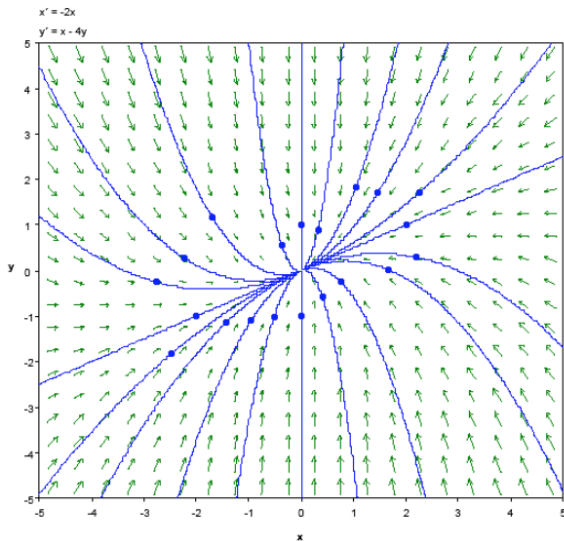
$\lambda_1 > 1 > \lambda_2 > 0$  Domain Space



$\lambda_1 > 1 > \lambda_2 > 0$  Range Space



# System $X'(t) = AX(t)$



“First Time in College” students in mac1114, mac1140, mac2233 and mac2311 are required to take aleks. And they must use the FSU Summer 17 – Spring 18 cohort.

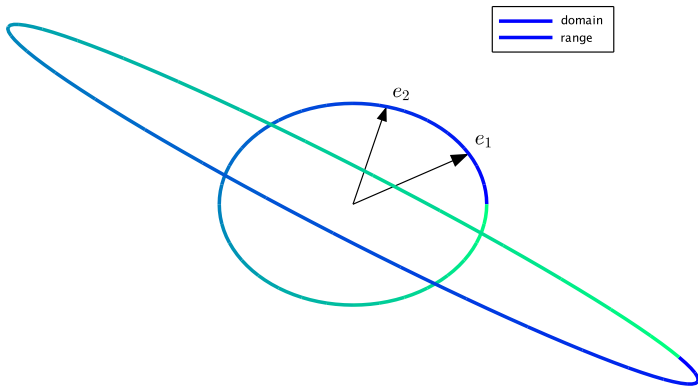
NOT a way to jump from MAC1105 to MAC2311

NOT a way to avoid repeating a course

NOT a way to avoid trigonometry – separate trig score

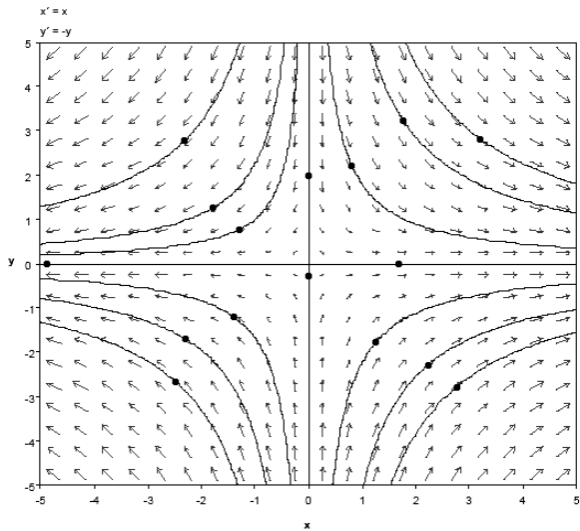
# Opposite signs

$$\lambda_1 > |\lambda_2| > 0 > \lambda_2$$





# Saddle Points

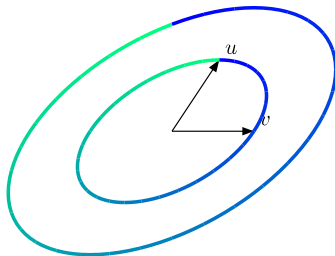
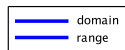


# Accommodations

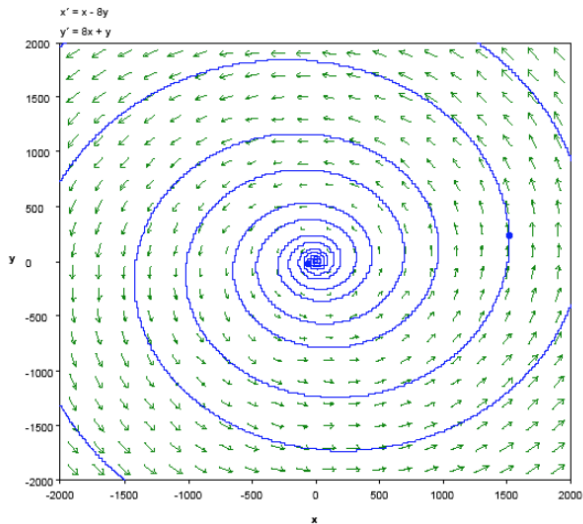
- The letter isn't the request. It is a basis for discussion.
- Unlimited Excused Absences. One extra excused absence.

# The Bad?

$$\lambda = u + iv$$



# Complex eigenvalues

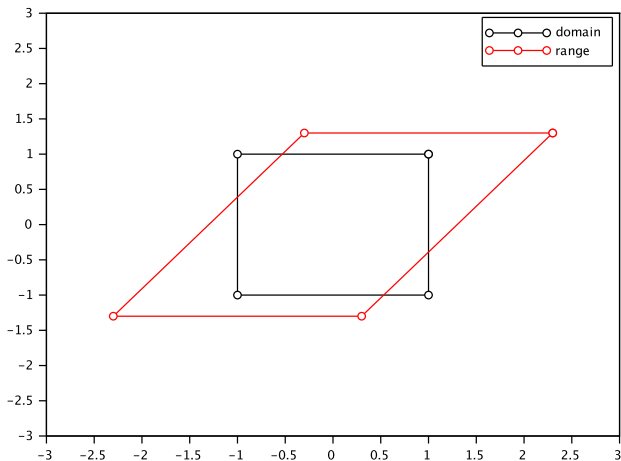


Advisors (other than Danielle or Kari) are not your friend

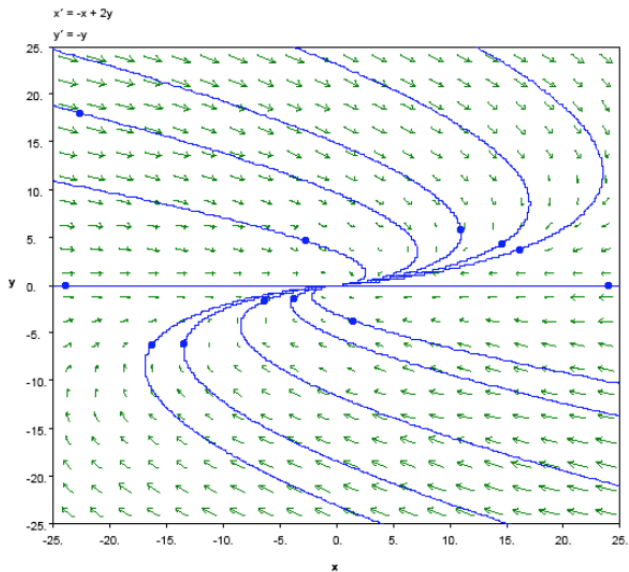
- Do not reply to email from students wanting to add your class, just forward them to [advisor@math.fsu.edu](mailto:advisor@math.fsu.edu)

# Generalized Eigenvectors

$$A = \begin{bmatrix} \lambda & 1 \\ 0 & \lambda \end{bmatrix}$$



# Differential systems



# Grade Distributions

<http://www.maa.org/CSPCC>

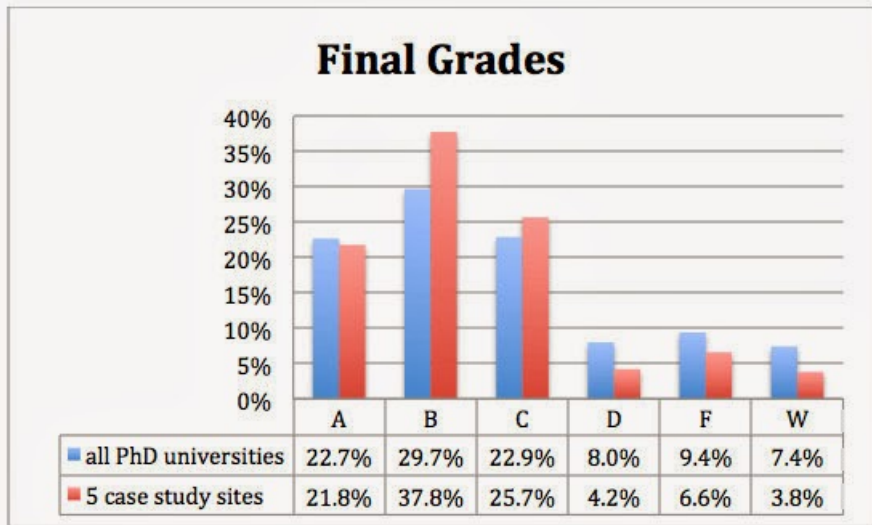


Figure 1: Instructor reported final grades.



# Colormap Gradients



jet



hot



cool



hsv



rainbow



winter

You have a lot of support, if you need help, ask.  
You are the math department.