Week 7 Day 1

Invertible Matrices

Make sure you know your neighbors' names. Then take 2 minutes to discuss:

Recall that $M_{2\times 2}$ is the vector space of 2×2 matrices. Let S be the subset of invertible matrices in $M_{2\times 2}$. Is S a subspace of $M_{2\times 2}$? Why or why not?

Upcoming

- For Wednesday: Submit review requests for midterm 2 via the same Google Form (linked on Canvas)
- For Friday: Read 5.2
- Midterm 2 on Friday evening; covers through chapter 4 (i.e., no determinants or eigenstuff)

Eigenstuff

1. Which of the following are eigenvalues of the following matrix?

$$\begin{bmatrix} 3 & 2 \\ 3 & 8 \end{bmatrix}$$

(A) $\lambda = 2$

(B) $\lambda = 7$

(C) $\lambda = 9$

(D) None of the above OR more than one of the above

2. Suppose $T : \mathbb{R}^2 \to \mathbb{R}^2$ is the linear transformation that reflects points through the x-axis. Which of the following is true about the standard matrix A of T?

(A) Everything nonzero on the x-axis is an eigenvector of A.

(B) Everything nonzero on the y-axis is an eigenvector of A.

(C) Everything nonzero on the line $x = y$ is an eigenvector of A.

(D) None of the above OR more than one of the above.

3. (A) True or (B) False? If $\lambda = 0$ is an eigenvalue of a square matrix A, then $\det(A) = 0$.

4. (A) True or (B) False? If a square matrix A has linearly dependent columns, then $\lambda = 0$ is an eigenvalue of A.