Week 2 Day 1

Anywhere

Turn to someone sitting near you (maybe someone you haven't talked to much before!), and take about 2 minutes to discuss:

If you could live anywhere in the world, where would you live? Why?

Solution Sets of Linear Systems

1. Let

$$A = \begin{bmatrix} 1 & -1 & -2 \\ 2 & -2 & -4 \end{bmatrix}.$$

The solutions to the matrix equation $A\mathbf{x} = \mathbf{0}$ form a...

(A) Plane

(B) Line

(C) Point

(D) None of the above

2. Suppose A is a 3×3 matrix with 3 pivot positions. Which of the following is necessarily true?

(A) The equation $A\mathbf{x} = \mathbf{0}$ must have a nontrivial solution.

(B) The equation $A\mathbf{x} = \mathbf{b}$ must be consistent for all $\mathbf{b}$.

(C) Both of the above.

3. Suppose A is a 3×4 matrix with 3 pivot positions. Which of the following is necessarily true?

(A) The equation $A\mathbf{x} = \mathbf{0}$ must have a nontrivial solution.

(B) The equation $A\mathbf{x} = \mathbf{b}$ must be consistent for all $\mathbf{b}$.

(C) Both of the above.

4. Suppose A is a 3×4 matrix with 2 pivot positions. Which of the following is necessarily true?

(A) The equation $A\mathbf{x} = \mathbf{0}$ must have a nontrivial solution.

(B) The equation $A\mathbf{x} = \mathbf{b}$ must be consistent for all $\mathbf{b}$.

(C) Both of the above.