Vocabulary

Word	Meaning
Consistent	If it has at least one solution.
Row equivalent	If a sequence of row operations transforms one matrix into the other.
Unique solution	If and only if there are no free variables
Homogeneous	Linear systems of the form $A\mathbf{x} = \mathbf{0}$
Inhomogeneous	Linear systems of the form $A\mathbf{x} = \mathbf{b}$ where $\mathbf{b} \neq \mathbf{0}$
Trivial solution	The solution is the zero vector
Linearly independent	If no vector can be made from other vectors
Row operations	Addition, Interchange, Scaling
Pivot position	A leading 1 in the RREF of A
Pivot column	Is a column of A that contains a pivot position
Domain	$T : \mathbb{R}^n \to \mathbb{R}^m$; $\mathbb{R}^n$ is the domain of T
Codomain	$T : \mathbb{R}^n \to \mathbb{R}^m$; $\mathbb{R}^m$ is the codomain of T
Image	The vector $T(\vec{x})$ is the image of $\vec{x}$ under T
Range	The set of all possible images $T(\vec{x})$ or simply the **span of A**
Standard vectors	The column of the identity matrix (think $\begin{bmatrix}1\\0\end{bmatrix}$ and $\begin{bmatrix}0\\1\end{bmatrix}$)
Onto	All the elements in the codomain are mapped to. (A spans the entire codomain), Every **row** is pivotal
One-To-One	Each mapping is unique (2 vectors can **NOT** map to the same vector), Every **column** is pivotal
Transpose	The matrix whose columns are the rows of A
Invertible	$A \in \mathbb{R}^{n \times n}$ is invertible if there is a $C \in \mathbb{R}^{n \times n}$ such that: $AC = CA = I_n$
Elementary Matrix	Differs from I_n by one row operation.
Singular	A matrix that is not invertible (A^{-1} DNE)
Subset	A subset of $\mathbb{R}^n$ any collection of vectors that are in $\mathbb{R}^n$
Subspace	If $H \in \mathbb{R}^n$, for $c \in \mathbb{R}$ and $\vec{u}, \vec{v} \in H$, $c\vec{u} \in H$ and $\vec{u} + \vec{v} \in H$ must be true if H is a subspace.
Column Space	This is a subspace spanned by the column of A.
Null Space	This is a subspace spanned by all $\vec{x}$ such that $A\vec{x} = \vec{0}$.

Word	Meaning
Basis	This is a set of linearly independent vectors in H that spans H assuming H is a subspace.
Coordinate Vector	These are the vectors that are used to describe the coordinate systems.
Coordinates	These are the weights of the coordinate vector used to describe the point.
Dimension	This is the number of vectors in a basis of H.
Cardinality	Same thing as Dimension