Matrices and Vector Spaces

Conditions for a Vector Space

(i) Vector set is closed under commutative and associative addition

(ii) Vector set is closed under distributative and associative multiplication by a scalar

(iii) Vector set contains a null vector

(iv) Multiplication by unity leaves any vector unchanged

(v) All vectors have a corresponding negative

Span of a vector space:	The span of a vector space is defined as the set of all vectors that can be expressed as a linear sum of the basis vectors: $\mathbf{x} = \alpha\mathbf{a} + \beta\mathbf{b} + ... + \sigma\mathbf{s}$

If $\mathbf{x}$ is equal to $\mathbf{0}$ for some choice of $\alpha, \beta, ..., \sigma$ then $\mathbf{a}, \mathbf{b}, ..., \mathbf{s}$