Spanning Set.

$Ax = b$.

If A is Square Matrix

Find Det (A).

If $|A| = 0$

Does not Span.

[bec System has no Solution or Many Solutions]

If $|A| \neq 0$.

Span.

[- System is Consistant and has unique Sol
- Can be written as linear Combinations]

If A is rectangular Matrix

Solve by gauss Jordan Method.

Consistant System. Span.

Inconsistant System

Does not Span.

[No linear Combinations].

Dep | Independent Vectors.

$Ax = 0$.
(Homo. System).

A is Square

Find Det(A)

$|A| = 0$

[Non-Trivial Sol]

Dep. Vectors.

$|A| \neq 0$.

[System will have Unique Sol]

Independent Vectors.

A is rectangular.

Solve System.

Unique Solution.

[Trivial Sol or Zero Sol].

Independent Vectors

Many Solution.

[Trivial + Non Trivial Sol]

Dependent Vectors