Graph Theory: List of Theorems

- A graph G is bipartite if and only if it contains no odd cycle.
- Whitney's Theorem.
- Euler's Theorem.
- Dirac's Theorem.
- The Chvatal-Erdős Theorem.
- Ore's Theorem (the maximum possible number of edges of an n-vertex non-Hamiltonian simple graph, where $n \geq 3$, is $\binom{n-1}{2} + 1$.)
- Hall's Theorem.
- In any biparite graph, the maximum size of a matching is equal to the minimum size of a vertex cover.
- Tutte's Theorem.
- Petersen's Theorem.
- The chromatic index of any bipartite graph is equal to its maximum degree.
- Vizing's Theorem.
- Brooks' Theorem.
- Turán's Theorem.
- Ramsey's Theorem.
- Euler's Formula for planar connected graphs.
- The Four Color Theorem (with a proof that five colors suffice).
- Fisher's Inequality (in any nontrivial decomposition of K_n into r complete graphs, $r \geq n$.)