R^N

Limits in R^N

Closed sets in R^N

Compact Sets in R^N

Continuous Functions in R^N

Image of a compact set under a continuous mapping is compact:
A continuous real-valued function on a compact set achieves its maximum

Convex Sets in R^N

Brouwer FPT

Firms: Compact strictly convex technology
Continuous profit maximizing behavior yields continuous supply function

Households: Continuous tastes can be represented by a continuous utility function
Continuous demand: Adequacy of income, continuous preferences

Existence of General equilibrium: Continuous excess demand function
Walras Law

1^{st} Fundamental Theorem of Welfare Economics