

Chapter 1: Introduction

1. Graphs can represent road maps, electrical circuits, system of bridges, networks, tournament, etc.
2. What is a graph?
 - Graph of a function
 - **Graph, vertices, edges, degree**
 - Ways of describing a graph: Set, Matrix, Picture
 - Length of edges are irrelevant, as are crossings without a vertex
3. Other Definitions:
 - (a) Graphs are the same if two vertices are joined by an edge in one graph if and only if the corresponding vertices are joined by an edge in the other.
 - (b) **Multiple edges, loop, simple graph**
 - (c) **Directed graph** (Digraph, Chapter 7)
 - (d) **Walk** - way or getting from one vertex to another or sequence of edges
 - (e) **Path** - a walk in which no vertex appears more than once
 - (f) **Cycle** - closed path
 - (g) **Eulerian Graph** and **Hamiltonian Graph** (Chapter 3)
 - (h) **Connected Graph** and **Disconnected Graph** (Chapter 3)
 - (i) **Trees** (unique path between vertex pair Chapter 4), **Planar graph** (Chapter 5)
4. Problem 1.7
Snakes eat frogs and birds eat spiders; birds and spiders both eat insects; frogs eat snails, spiders and insects. Draw a digraph representing this predatory behavior.