

## Introduction to Data Science: Homework 3

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1.

(a) An acyclic (or approximately acyclic) directed network

Example: epidemiological

(b) A cyclic directed network

Example: time travelers

(c) A tree (or approximate tree)

Example: markup language

(d) A planar (or approximately planar) network

Example: traffic maps

(e) A bipartite network

Example: musicians & albums

(f) A temporal network (or sequence of edges)

Example: snapshots

2.

(a)

A	1	2	3	4	5
1	0	0	0	0	1
2	1	0	1	1	0
3	0	0	0	0	0
4	0	1	1	0	1
5	0	0	0	1	0

(b)

A	
1	{5}
2	{1,3,4}
3	
4	{2,3,5}
5	{4}

(c)

	1	2	3	4	5
1	0	1	1	0	0
2	1	0	1	0	0
3	1	1	0	1	0
4	0	0	1	0	1
5	0	0	0	0	1

●	1	2	3	4	5	6
1	0	1	1	1	0	0
2	1	0	0	0	0	0
3	1	0	0	1	1	1
4	1	0	1	0	0	0
5	0	0	1	0	0	1
6	0	0	1	0	1	0

(d)

Collaboration: by myself