

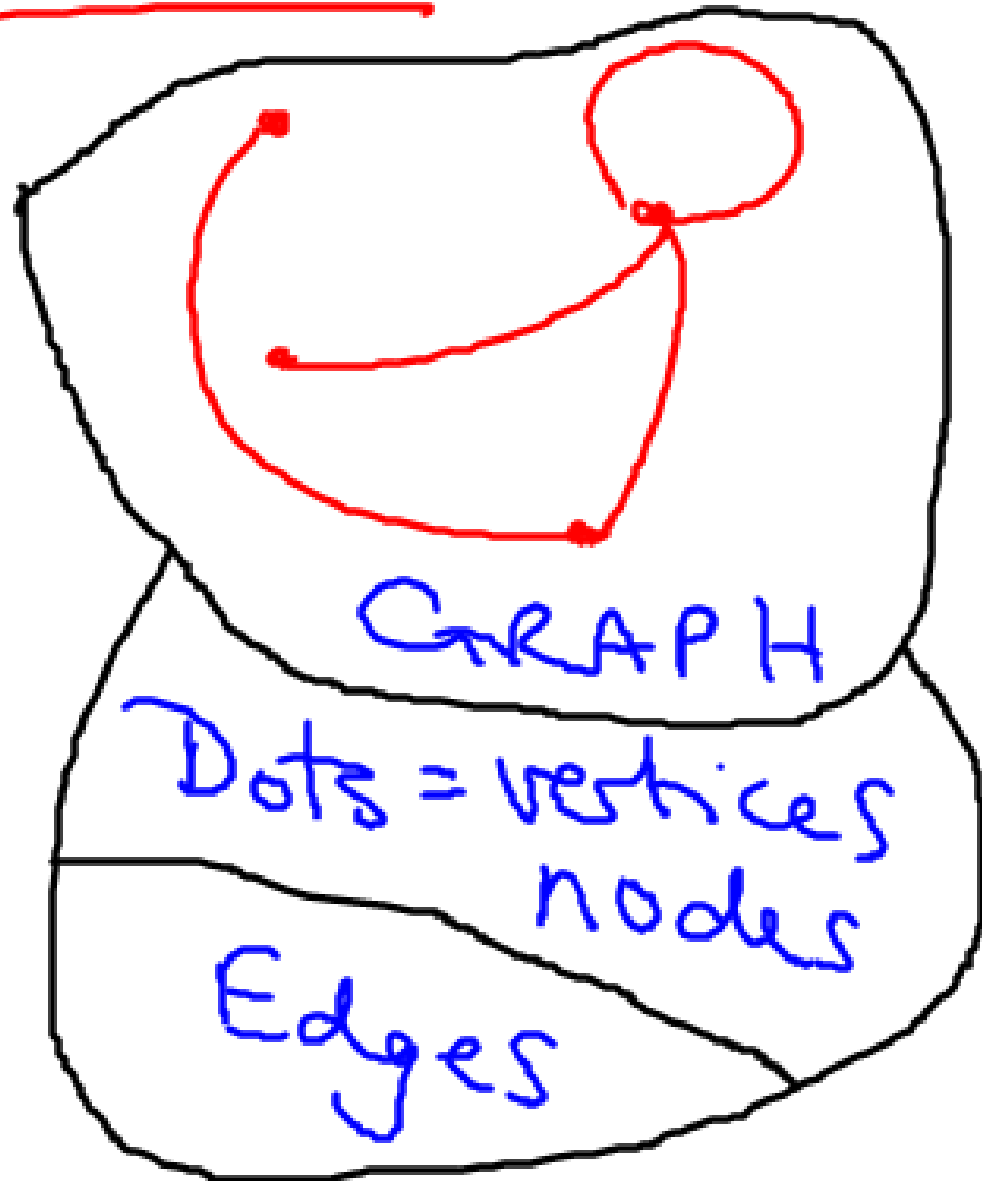
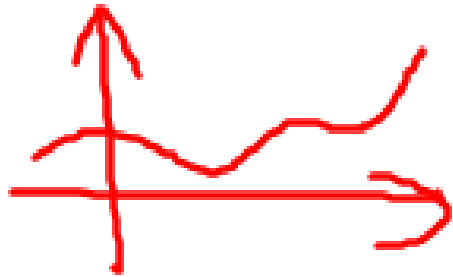
Module: D1 Block: Z Date: 10-9-13

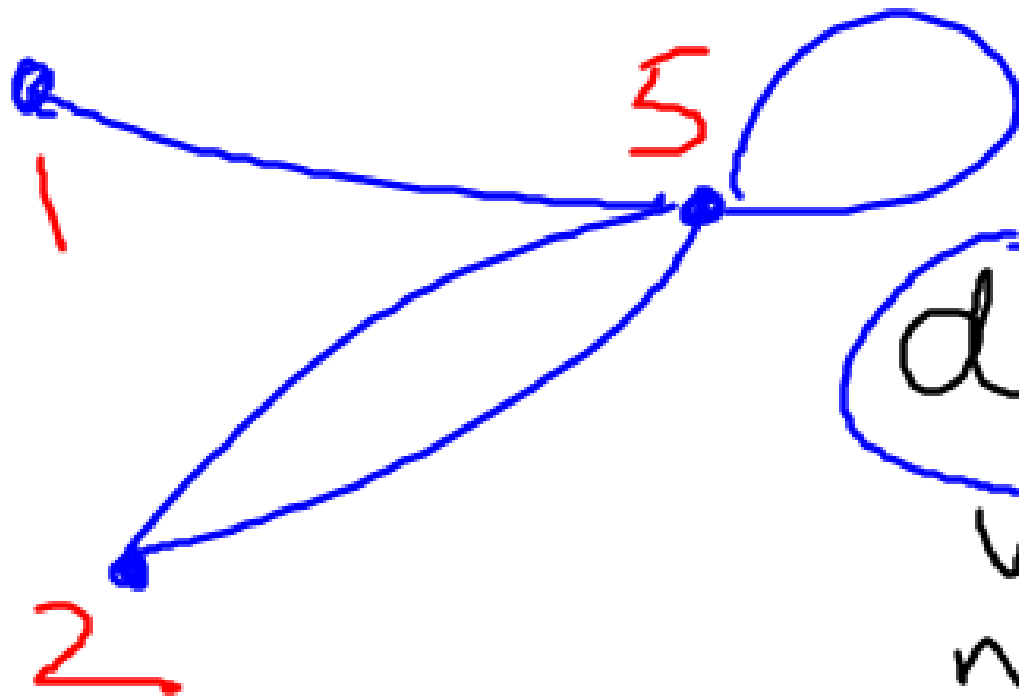
Objectives:

You should:

- Understand notation and terminology (nodes/[vertices](#); arcs/[edges](#); [trees](#); node [degree](#)/order; [simple graphs](#), [complete graphs](#), [connected graphs](#) and [bipartite graphs](#); [walks](#), [trails](#), [cycles](#) and [Hamilton cycles](#); [digraphs](#); [planarity](#)).
- Be able to model appropriate problems by using graphs.

GRAPHS





degree of a
vertex =
number of
edges coming
out!

V	E	Repeats	loops	product degrees
3	4	1	1	10
3	3	0	1	4
				20

$$V=3$$
$$\sum d = 4$$

$$1 \times 1 \times 4 = 4 \quad \checkmark$$

$$1 \times 2 \times 2 = 4 \quad \times$$



Theorem

$$\sum d = \text{even} = 2E$$

number



$$V=3$$

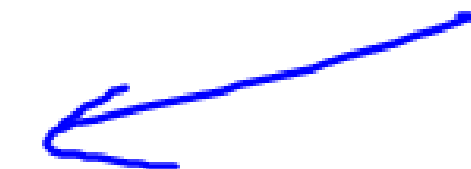
$$\prod d = 20$$

$$1 \times 1 \times 20$$

$$1 \times 2 \times 10$$

$$1 \times 4 \times 5$$

$$2 \times 2 \times 5$$



X

X



SPROUTS

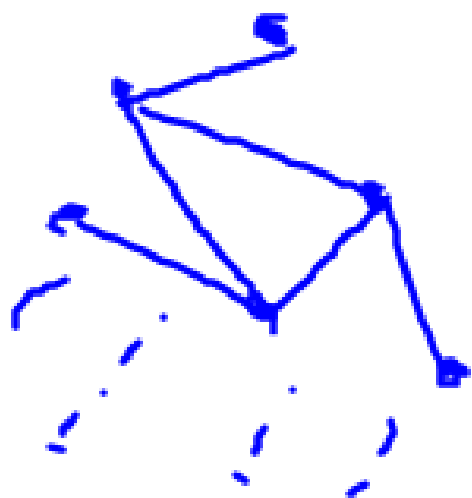


V	E	F	$V + F - E$
10	14	6	2
5	22	5	2
4	15	7	2
20	20	8	2

EULER'S THEOREM

For a ^{connected} graph, $V + F - E = 2$

Imagine the smallest graph
for which this is untrue

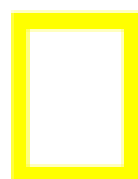


Take off dot + edge x
" " edge x

Teach yourself the gaps!

Homework

MEI Decision 1



Graphs 1: Background and definitions

Section test and ~~chapter assessment~~



Multiple choice section test Questions



Graphs 1 Section Test