

## Reminder II

- Cycle, graph. Hamiltonian cycle (all vertices),  
↳ travelling salesman problem  
Eulerian tour (all edges, only once).

↳ statement about Eulerian graph.

- Weighted graph  $G = (V, E, i, w)$   $w = (w_V, w_E)$

with  $w_V : V \rightarrow \mathbb{R}$ ,  $w_E : E \rightarrow \mathbb{R}$ , weighted length.

- Adjacency matrix encodes the information of the graph

⚠ conventions.  $\deg_{in}(x)$ ,  $\deg_{out}(x)$ .

Incident matrix, incidence table.

- Isomorphism of graphs:  $f = (f_V, f_E) : G \rightarrow G'$  s.t.

$f_E, f_V$  are bijective, and if  $i(e) = (x, y)$ , then

$i'(f_E(e)) = (f_V(x), f_V(y))$  compatibility condition.

Then  $G$  and  $G'$  are isomorphic, denoted  $G \cong G'$ .

- Graph invariants (preserved by isomorphisms).

↑ useful for showing that 2 graphs are not isomorphic