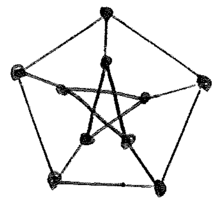
- EXERCICES -

SHEET 2

Exercice 1

(*) 1) Prove that a Cayley graph is transitive.

2) We consider Petersen's graph defined by

$G =$ 

- Check that G is transitive
- Prove that G is not a Cayley graph.

<u>Hint</u>: use that the only groups of order 10 are $\mathbb{Z}/_{10\mathbb{Z}}$ and the diedral group D_{10}.

(*) Exercice 2

Let $G=(V,E)$ be a locally finite transitive graph.

1) Prove that for every $x, y \in V$ $\deg(x) = \deg(y)$

2) Let $\phi \in \mathrm{Aut}(G)$ prove that $d(\varphi(x), \varphi(y)) = d(x,y)$

(*) Exercice 3

Prove Fekete's subadditivity lemma.

(*) Exercice 4

Let G be a locally finite transitive graph (infinite)

Prove that (G non amenable) $\Rightarrow$ (G has exponential growth)