

# M2 – NSD (Exercises 4)

Models: Erdős-Rényi graphs

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## Exercise 1 — *Erdős-Rényi model*

Enumerate all existing Erdős-Rényi  $(m,n)$  graphs, with  $n = 5$  nodes and  $m = 5$  links.

Suppose that we generate randomly one of these graphs, compute

- the probability for its clustering coefficient to be exactly 0, to be larger than  $2/3$ ,
- the most probable size of its largest connected component,
- the probability for the average distance in the largest connected component to be lower than 1.2.

Qualitatively, how do you think these properties evolve when  $m = n = k$ , and  $k \rightarrow \infty$ ?