

Problem. Find a necessary and sufficient condition in terms of  $R_k^+$  and  $R_k^-$  for a connected locally finite transitive one-ended digraph to have **property II**.

### 6. Growth

$X$  ... undirected, loc. finite, connected

$$f_X(v, n) = |\{u \in V(X) \mid d(v, u) \leq n\}|$$

$$f_X(n)$$

$$c_1 n^d \leq f_X(n) \leq c_2 n^d \quad \dots \text{polynomial}$$

$$f_X(n) \geq c^n \quad c > 1 \quad \dots \text{exponential}$$