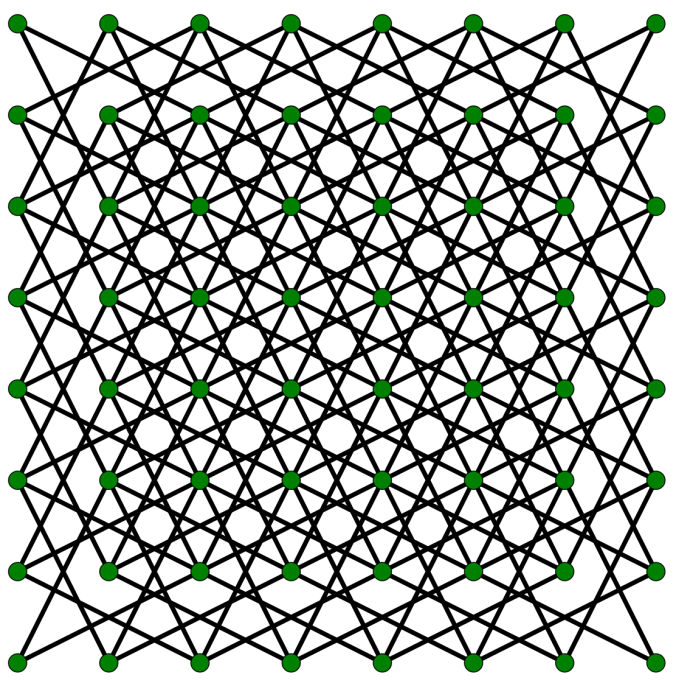
# Games, graphs, and machines



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# Boolean powers

**Theorem**
*Let $A$ be the boolean adjacency matrix of a graph. Then the powers of $A$ are eventually periodic.*

$A^1, A^2, A^3, \ldots A^n, A^{n+1}, \ldots, A^{n+p}, A^{n+p+1}$

All $d \times d$ matrices. Boolean. } finite $2^{d^2}$.

So powers have to repeat

$A^{100}$ $A^{123}$ $\Rightarrow$ $A^{101} = A^{124}$

$\Rightarrow$ 23 periodic after 100.

# Min/plus power

Construct an example where the min/plus powers do not stabilise.