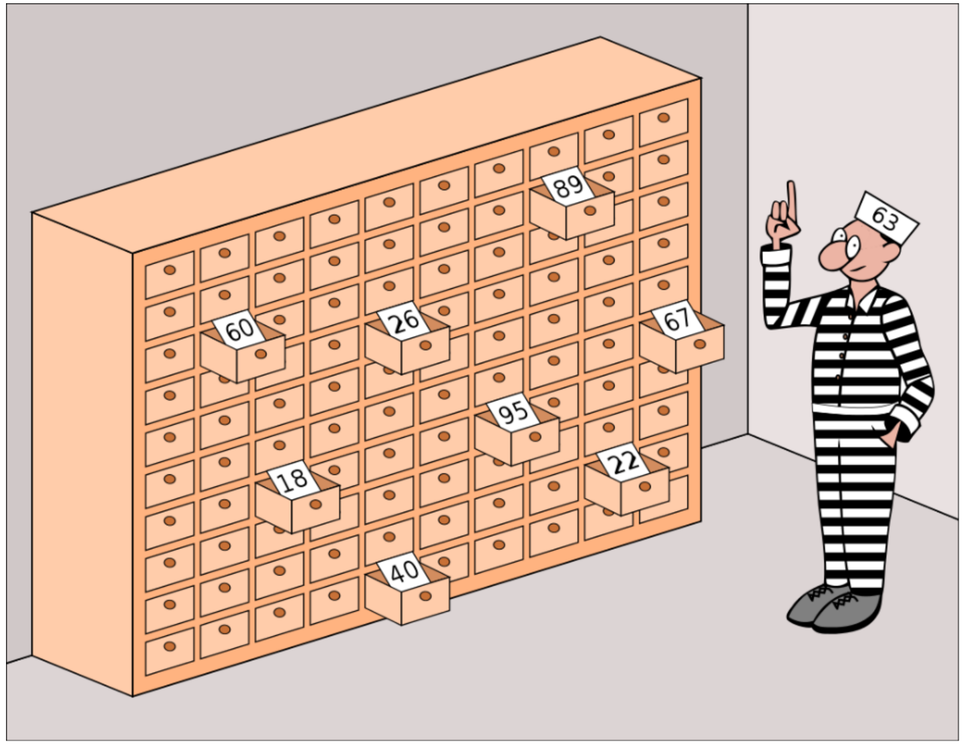
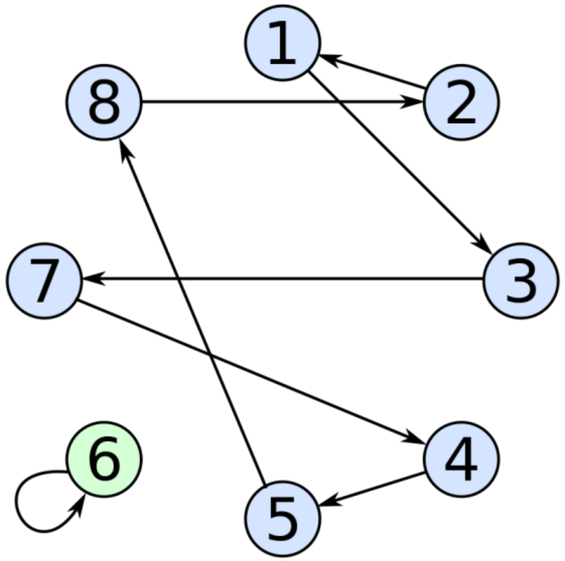
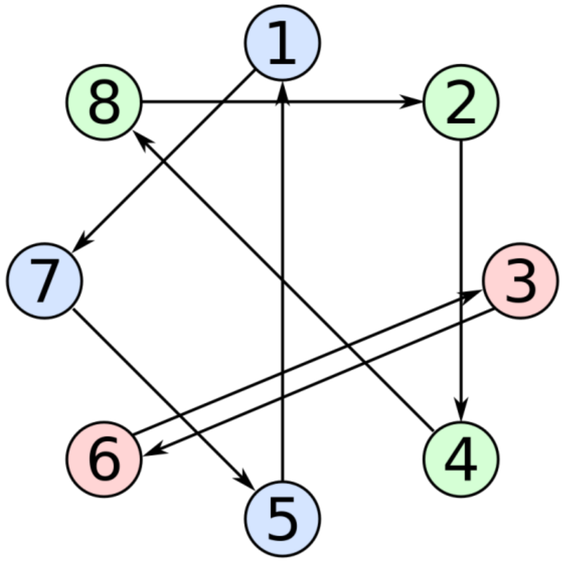
Combinatoric Problems

The 100 prisoners



The 100 prisoners





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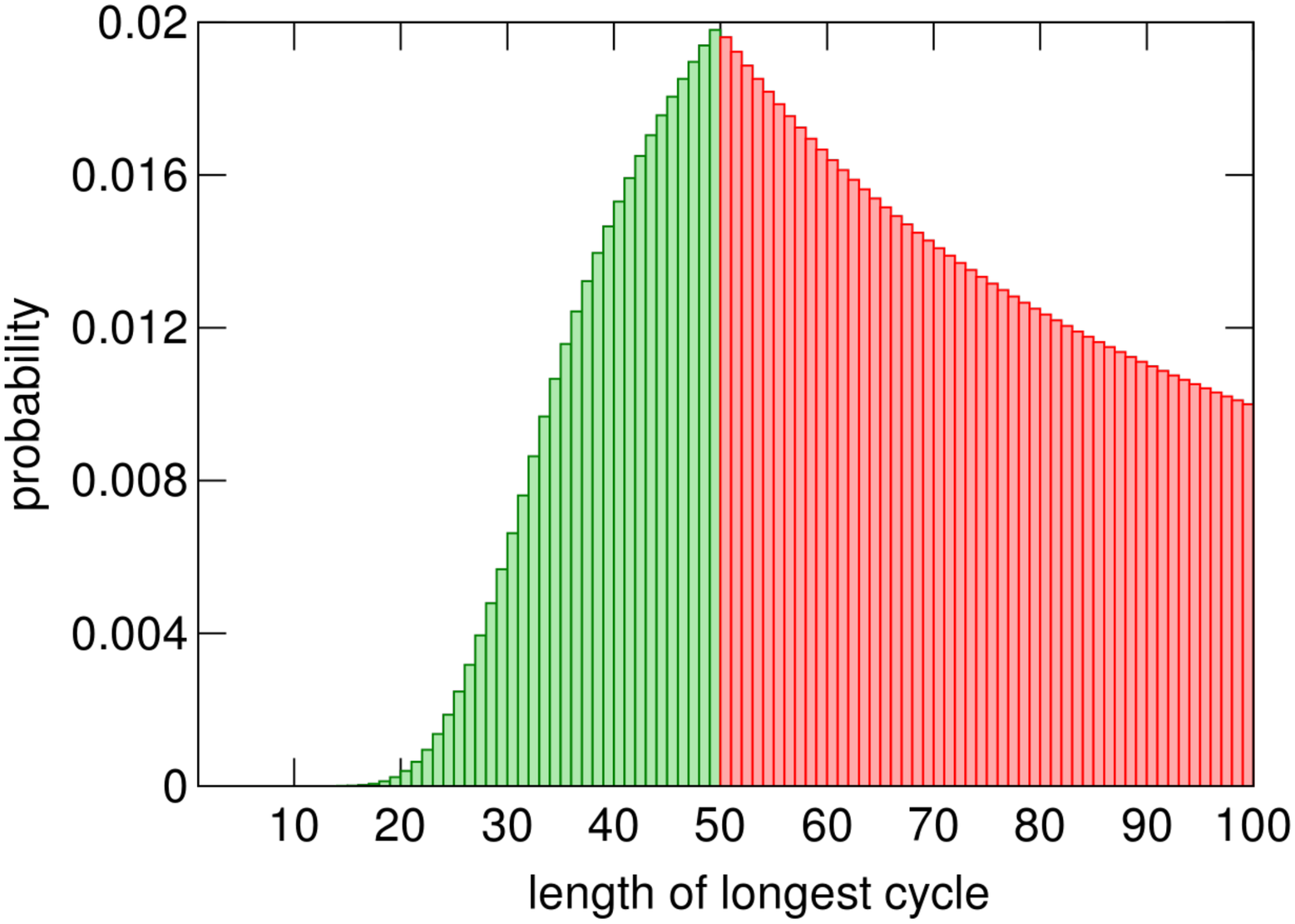

The 100 prisoners

If $n \to \infty$

$$
\begin{aligned}
\gamma &= \lim_{n\to\infty}\left(\sum_{k=1}^{n}\frac{1}{k}-\ln n\right)\\
&= \lim_{n\to\infty}\left(\sum_{k=1}^{n}\frac{1}{k}-\int_{1}^{n}\frac{\mathrm{d}k}{k}\right)\\
&= \sum_{n=1}^{\infty}\left\{\frac{1}{n}-\ln\left(1+\frac{1}{n}\right)\right\}\\
&= \int_{1}^{\infty}\left(\frac{1}{\lfloor x\rfloor}-\frac{1}{x}\right)\mathrm{d}x\\
&\approx 0.57721566490153286060\cdots
\end{aligned}
$$

Oddtown

Oddtown

Oddtown

Oddtown

Oddtown

THANK YOU!