

$$\begin{aligned}
 p_{uni} &= 1 - \prod_{i=1}^{m-1} \left( 1 - \frac{i}{n} \right) \\
 &\geq 1 - \exp \left( - \sum_{i=1}^{m-1} \frac{i}{n} \right) = 1 - \exp \left( - \frac{(m-1)m}{2n} \right).
 \end{aligned}$$