

$$\binom{N}{k} \geq \left(\frac{N}{k}\right)^k$$

We say in recitation 2 that if

$$2 \leq y \leq \frac{x}{2}$$

then

$$\frac{x}{y} \leq \frac{x-1}{y-1} \iff -xy - x \leq xy - y \iff y \leq x$$

So why isn't it enough that  $y \leq x$  ?