Fibonnaci

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$$F_n >= 2^{n/2} \qquad \text{for } n >= 6$$

Base

TODO. CALCULATE 6 AND 7 MANUALLY

Induction Step

$$\begin{aligned}
F_n &>= 2^{n/2} \\
F_n &= F_{n-1} + F_{n-2} \\
&>= 2^{(n-1)/2} + 2^{(n-2)/2} \\
&= (X + 2^{(n-2)/2}) + 2^{(n-2)/2} \qquad X > 0 \\
&= 2 * 2^{(n-2)/2} \\
&>= 2 * 2^{(n-2)/2} \\
&= 2^{\frac{n-2}{2}+1} \\
&= 2^{\frac{n-2}{2}+\frac{2}{2}} \\
&= 2^{\frac{n}{2}} \\
&>= 2^{n/2}
\end{aligned}$$

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