

**640:300 WORKSHOP 7**  
**METHOD OF SMALLEST COUNTEREXAMPLES**

*Consider the sequence  $a_1 = 5$ ,  $a_2 = 13$ , and  $a_{n+2} = 5 \cdot a_{n+1} - 6 \cdot a_n$ .*

*Prove using the method of smallest counterexamples that for all  $n \in \mathbb{N}$ ,  $a_n = 2^n + 3^n$ .*