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Homework 13
Mathematics 2216.01
Due October 17, 2022

1. Let n be a positive integer. Show by induction that $(F_n, F_{n+1}) = 1$.
2. On an earlier homework we proved that if k and n are integers, with $n \geq 2$ and $k \geq 0$, then

$$F_n F_{n+k} - F_{n-1} F_{n+k+1} = (-1)^{n+1} F_{k+1}.$$

Let a be a positive integer. Use this formula to prove that $F_a | F_{2a}$.

3. Suppose that z and w are complex numbers. Prove that

$$|z - w| \geq |z| - |w|.$$