Name: _____

Directions: Solve the following problems. Give supporting work/justification where appropriate.

1. [**5 points**] Recall the Fibonacci sequence, given by $F_0 = 0$, $F_1 = 1$, and $F_n = F_{n-1} + F_{n-2}$ for $n \geq 2$. Show that for $n \in \mathbb{N}$, we have $\sum_{k=1}^{n} F_k = F_{n+2} - 1$.

2. [**5 points**] Prove that if n is an integer and $n \geq 16$, then there exist *positive* integers x and y such that $n = 3x + 5y$. (Hint: consider treating more than 1 case in the basis step.)