

1. Let $S = \{1, 3, 5, 7, 9, \dots, a_n\}$ $n \in \mathbb{N}$ be a sequence of coefficients for a polynomial. Describe the polynomial in another way and give properties of the polynomial.
2. Let $S = \{1, 4, 9, 16, 25, \dots, a_n\}$ $n \in \mathbb{N}$ be a sequence of coefficients for a polynomial. Describe the polynomial in another way and give properties of the polynomial.
3. Let $S = \{1, 2, 3, 6, 12, 24, 48, \dots, \sum_{i=0}^n a_i\}$ $n \in \mathbb{N}$ be a sequence of coefficients for a polynomial. Describe the polynomial in another way and give properties of the polynomial.
4. The Fibonacci sequence is given by $F = \{1, 1, 2, 3, 5, 8, 13, \dots\}$ ($F_{k+1} = F_k + F_{k-1}$ for $k \in \mathbb{N}$.) Let it be a sequence of coefficients $\{a_n\}$ for a polynomial. Describe the polynomial in another way and give properties of the polynomial.
5. (Everyone) A frictionless projectile is shot in the (x, y) plane where gravity acts only in the y direction. Write its path of motion as $y = p(x)$. Give the maximum height and maximum distance obtained by the projectile.