HOMEWORK 5

1. Let $F_n$ be the $n^{\text{th}}$ Fibonacci number. Let $S_n = F_1 + F_2 + \cdots + F_n$. Find $S_1$ through $S_{12}$. Do you notice anything?

2. Let $A_1 = 1$ and $A_n = 2A_{n-1} + 1$ for $n \geq 2$. Find $A_1$ through $A_{10}$. Do you notice anything?

3. Let $F_n$ be the $n^{\text{th}}$ Fibonacci number. Let $T_n = F_2 + F_4 + \cdots + F_{2n}$. Find $T_1$ through $T_6$. Do you notice anything?

4. Let $U_n = F_1 + F_3 + F_5 + \cdots + F_{2n-1}$. Find $U_1$ through $U_6$. Do you notice anything?

5. Let $P_n = 1 + 2 + 2^2 + \cdots + 2^n$. Find $P_1$ through $P_{10}$. Do you notice anything?

6. Let $Q_n = 2 + 2 \cdot 3 + 2 \cdot 3^2 + \cdots + 2 \cdot 3^n$. Find $Q_1$ through $Q_6$. Do you notice anything?

7. Let $C_n = 1 + 2 + 3 + \cdots + n$. Find $C_1$ through $C_{15}$.

8. Let $D_n = 1^3 + 2^3 + 3^3 + \cdots + n^3$. Find $D_1$ through $D_6$. Do you notice anything?