Step-1

The relation between F_{-k} and F_k is as follows: $\boxed{F_{-k} = (-1)^{k+1} F_k}$.

Step-2

Since the difference equation of the Fibonacci series is $F_{k+2} = F_{k+1} + F_k$, we can write $F_k = F_{k+2} - F_{k+1}$. Thus, we get

$$F_0 = F_2 - F_1$$
$$\quad = 0$$
$$F_{-1} = F_1 - F_0$$
$$\quad = 1$$
$$F_{-2} = F_0 - F_{-1}$$
$$\quad = -1$$
$$F_{-3} = F_{-1} - F_{-2}$$
$$\quad = 2$$

Step-3

Thus, we can obtain the further terms of the Fibonacci series. It is as follows:

0, 1, –1, 2, –3, 5, –8 13, –21, –34, 55, –89,...

Thus, the numerical values of the terms remain the same and the terms are alternately positive and negative.

Thus, note the following:

$$F_{-1} = F_1$$
$$F_{-2} = -F_2$$
$$F_{-3} = F_3$$
$$F_{-4} = -F_4$$

And so on!