Show your work on the following problems. If you have any questions ask me.

(1) Assume $a_0 = 1$ and $a_n = 3a_{n-1} + (-1)^n$ for $n \geq 1$, then calculate a_1, a_2, a_3 and a_4.

(2) Assume $b_0 = 1$ and $b_1 = 2$ and $b_n = 2b_{n-1} + 3b_{n-2}$ for $n > 1$, then calculate b_2, b_3 and b_4.

(3) Assume $c_n = (3^{(n+1)} + (-1)^n)/4$ for $n \geq 0$, then calculate c_0, c_1, c_2, c_3 and c_4.

(4) Show by induction that $a_n = c_n$ for $n \geq 0$.

(5) Show by induction that $b_n = c_n$ for $n \geq 0$.