

# Final Homework for Fall '18 CE16

For each of the problems below, find the closed form for the recurrence and then prove the closed form is correct by induction.

1.  $a_n = a_{n-1} + 2a_{n-2}$  with  $a_0 = 2$  and  $a_1 = 7$
2.  $a_n = 5a_{n-1} - 6a_{n-2}$       $a_0 = 1$  and  $a_1 = 0$
3.  $a_n = 4a_{n-1} - 4a_{n-2}$       $a_0 = 6$  and  $a_1 = 8$
4.  $a_n = -4a_{n-1} - 4a_{n-2}$       $a_0 = 0$  and  $a_1 = 1$
5.  $a_n = 4a_{n-2}$       $a_0 = 0$  and  $a_1 = 4$
6.  $a_n = a_{n-1} + 6a_{n-2}$       $a_0 = 3$  and  $a_1 = 6$
7. Find the closed form for  $F_n$ , where  $F_0 = 0$ ,  $F_1 = 1$  and  $F_n = F_{n-1} + F_{n-2}$