

1. Solve the recurrence relations

a) $a_n = 2a_{n-1} + n.$

b) $a_n = 2a_{n-1} + 2^n$

c) $a_n = 2a_{n-1} + 2a_{n-2}.$

2. Solve

$$a_n = a_{n-4}$$

with $a_0 = 1, a_1 = 0, a_2 = -1, a_3 = 1.$

3. Express the solution to

$$a_n = a_{n-1} + a_{n-2} + 1, \quad a_0 = 0, a_1 = 1$$

in terms of $F_n.$

4. Construct a recurrence relation for the number of operations needed in fast multiplication.