1. Find the solution of each of the following recurrence relations and initial conditions
   (a) $a_n = 3a_{n-1}, \quad a_0 = 2.$
   (b) $a_n = a_{n-1} + 2, \quad a_0 = 3.$
   (c) $a_n = 2a_{n-1} - 1, \quad a_0 = 1.$
   (d) $a_n = 2na_{n-1}, \quad a_0 = 1.$

2. First-order and second-order linear recursions
   6.11, 6.31, 6.32

3. Consider the nonhomogeneous linear recurrence relation $a_n = 2a_{n-1} + 2^n$.
   (a) Show that $a_n = n2^n$ is a (particular) solution of this recurrence relation
   (b) Find all solutions of this recurrence relation.
   (c) Find the solutions of this recurrence relation with $a_0 = 2$.

4. (a) Determine values of the constants A and B such that $a_n = An + B$ is a (particular) solution of recurrence relation $a_n = 2a_{n-1} + n + 2$.
   (b) Find all solution of this recurrence relation.
   (c) Find the solutions of this recurrence relation with $a_0 = 4$.

5. (a) Determine value of the constant A such that $a_n = A4^n$ is a (particular) solution of recurrence relation $a_n = -5a_{n-1} - 6a_{n-2} + 42 \cdot 4^n$.
   (b) Find all solution of this recurrence relation.
   (c) Find the solutions of this recurrence relation with $a_1 = 56$ and $a_2 = 278$.

6. Proof
   6.34