20) Assume that the population of the world in 2010 was 6.9 billion and is growing at the rate of 1.1% a year.
   a) Set up a recurrence relation for the population of the world \( n \) years after 2010.
   b) Find an explicit formula for the population of the world \( n \) years after 2010.
   c) What will the population of the world be in 2030?

22) An employee joined a company in 2009 with a starting salary of $50,000. Every year this employee receives a raise of $1000 plus 5% of the salary of the previous year.
   a) Set up a recurrence relation for the salary of this employee \( n \) years after 2009.
   b) What will the salary of this employee be in 2017?
   c) Find an explicit formula for the salary of this employee \( n \) years after 2009.

18) Show that if \( n \) is an integer, then \( n = \lfloor n/2 \rfloor + \lceil n/2 \rceil \).

22) Prove that \( \lfloor n/2 \rfloor \lceil n/2 \rceil = \lfloor n^2/4 \rfloor \) for all integers \( n \).