

Math 3353 Mathematical Modeling Assignment 1

1. In year zero, we begin with a single pair of newborn rabbits, one male and one female, and in year one, we introduce two more pairs of baby rabbits. A pair of rabbits gives birth to six pairs of rabbits, each pair including one male and one female, every year, beginning at **two** years of age. These rabbits are immortal.
 - a) Use Excel to find the number of **pairs of** rabbits for the first 20 years.
 - b) Use Excel to compute P_n/P_{n-1} where P_n represents the number of pairs of rabbits in year n .
 - c) Use the method of the characteristic polynomial to find a formula for P_n .
2. Repeat problem 1 except that in year zero, we begin with 3 pairs of baby rabbits, and in year one, we introduce one more baby rabbit pair.
3. Discuss the growth rate for the examples in problems 1 and 2, and compare them to the examples discussed in class.