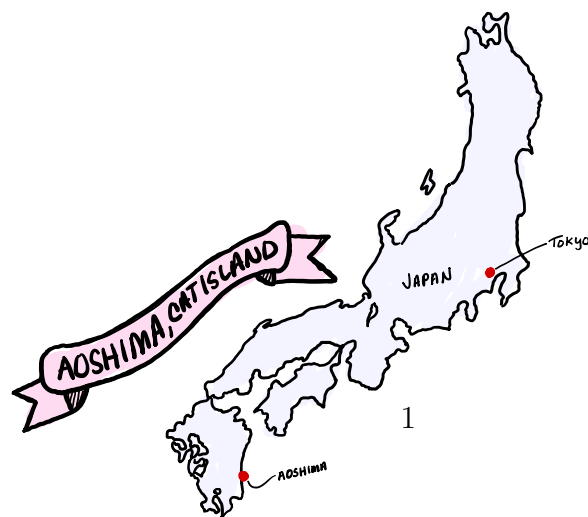


1. In 1945, three cats were introduced to the small island of Aoshima off of the coast of Japan to protect silkworms- which were used by fishermen to make fishing nets- from mice. In 1980, 26 cats lived on the island.

Suppose that the cat population on Aoshima is growing exponentially. Find a model for the population as a function of years t since 1945.

- (a) Specialists declare that Aoshima will be overcrowded with cats when the population reaches or exceeds 100. Use your model to predict the year that this will occur.



2. In 1945, there were 900 human residents of Aoshima. By 2015, only 22 people lived on the island. Find a model for the (human) population of Aoshima as a function of years t since 1945.

(a) Will the (human) population of Aoshima ever reach 0? Interpret this in the context of the problem.

(b) Using the two population models that you have created, determine what year the cat population be larger than the human population.