1. On a certain patch in Montana, a group of rabbits exist. The initial population is 200 rabbits and the number doubles every 400 days.

   (a) Write down the general differential equation that represents exponential growth and decay.

   (b) Using the solution of the differential equation, solve for how large the population will be after 200 days. Simplify your answer so that it is in terms of $\sqrt{2}$.