



*Math 2E03- Introduction to
Modelling*

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Problem 5

Consider a large tank holding $1000L$ of pure water into which a brine solution of salt begins to flow at a rate of $6L/min$. The solution inside the tank is kept well stirred and is flowing out of the tank at a rate of $5L/min$. If the concentration of salt in the brine entering the tank is $1kg/L$, determine the concentration of salt in the tank as a function of time.



Problem 6

In 1790 the population of the United states was 3.93 million, and in 1890 it was 62.95 million. Now assume that US population predict the exponential growth. Therefore find out the US pop. as a function of time.



Problem 7

Suppose a fish hatchery removes a fixed number p of fishies every generation (the fish have a natural growth rate of r). Is it possible for the population to remain the same from generation to generation?. If so, what is this population in terms of the stated parameters? Given an initial population a_0 , drive an expression for the population of the n^{th} generation.