PSYC 5090: Topics in Mathematical Psychology

Tarleton State University Homework 3

Consider the data from Murdock (1961) that was presented in Lectures 1 and 3. In this homework, we will walk through fittng an *exponential* model using maximum likelihood estimation.

1. Write the likelihood function $L(a, b \mid x)$, assuming that the probability of successful recall w is a exponential function of time t; i.e., $w(t) = ab^t$.
2. Compute the log likelihood function.
3. Use the optim function in R to compute the maximum likelihood estimates for the parameters a and b. That is, given the Murdock (1961) data, what are the most likely values of a and b?
4. Using these parameter estimates, plot the resulting exponential curve on the original Murdock (1961) data (i.e., the proportion recall).