PSYC 5090: Topics in Mathematical Psychology

Tarleton State University — Homework 1

Rubin and Baddeley (1989) measured the proportion of participants who correctly recalled details from a past colloquium talk as a function of time in years. The data are below:

Time (years)	Proportion recall
0.05	0.38
0.25	0.26
0.30	0.22
0.60	0.20
0.95	0.11
1.30	0.07
1.40	0.16
1.60	0.10
1.80	0.08
2.50	0.05
2.70	0.01

1. Plot the data with Time on the horizontal axis and Proportion recall on the vertical axis.
2. Construct a linear model $y = a + bx$ and plot it against the original data. Be sure to specify your estimates for the parameters a and b.
3. Construct an exponential model $y = ab^x$ and plot it against the observed data. Be sure to specify your estimates for the parameters a and b.
4. Construct a power model $y = ax^b$ and plot it against the observed data. Be sure to specify your estimates for the parameters a and b.
5. Which model best fits the data? Explain.