

IM343

HOMEWORK V (Due on 22.11.2019)

Q1) The following model is frequently used in environmental engineering to parameterize the effect of temperature, T ($^{\circ}\text{C}$), on biochemical reaction rates, k (per day),

$$k = k_{20}\theta^{T-20}$$

where k_{20} and θ are parameters. Use a transformation to linearize this equation. Then employ linear regression to estimate k_{20} and θ and predict the reaction rate at $T = 17^{\circ}\text{C}$.

T ($^{\circ}\text{C}$)	6	12	18	24	30
k (per day)	0.14	0.20	0.31	0.46	0.69

Q2) Use multiple linear regression to fit

x_1	0	0	1	2	0	1	2	2	1
x_2	0	2	2	4	4	6	6	2	1
y	14	21	11	12	23	23	14	6	11

Compute the coefficients, the standard error of the estimate, and the correlation coefficient