MINIPROJECT #2

There is a toxic substance X in a pond (1mg/L). The kinetics of its biodegradation (mg/L·day) is described by the following empirical equations:

$$\frac{dX}{dt} = -kX$$

$$k = -\frac{(T-a)^2}{b} + c;\ [1/\text{day}]$$

$$a = 21, b = 100, c = 0.81$$

At what temperature (*T,* °C) does biodegradation occur most rapidly?

Prepare a biodegradation model:

1) assuming constant and optimal temperature;

2) assuming daily temperature fluctuations from 13 to 30°C.

Compare the biodegradation results: scenario 1) vs. 2).

The project should contain Python code used for calculations along with your brief comments explaining the most important parts of the code as well as your assumptions and results you got.