CP.4.5.11.b, Sauer3

Apply Levenberg-Marquardt to fit the model $y = c_1 e^{-c_2 t}\cos(c_3 t + c_4)$ to the following data points, with an appropriate initial guess. State the initial guess, the regularization parameter λ used, and the RMSE. Plot the best least squares curve and the data points. This problem has multiple solutions with the same RMSE, since c_4 is only determined modulo 2π.

$$(t_i, y_i) = \{(1,2),\ (3,6),\ (4,4),\ (5,2),\ (6,-1),\ (8,-3)\}\,.$$