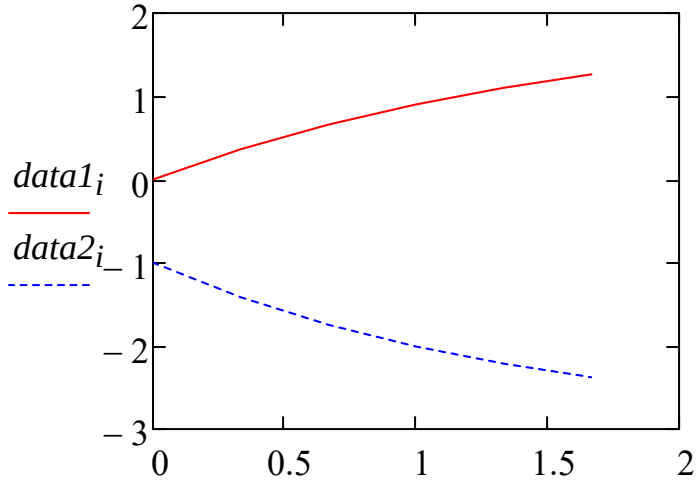
NonLinear Least Squares Curve Fitting - Using Minimize

$$F(t, A, B, C) = A + B \cdot e^{C \cdot t} \qquad i = 0 .. 5$$

$$t_i = \frac{i}{3} \qquad data1_i = F(t_i, 2, -2, -0.6) \qquad data2_i = F(t_i, -3, 2, -0.7)$$

$$t = \begin{pmatrix} 0 \\ 0.333 \\ 0.667 \\ 1 \\ 1.333 \\ 1.667 \end{pmatrix} \qquad data1 = \begin{pmatrix} 0 \\ 0.363 \\ 0.659 \\ 0.902 \\ 1.101 \\ 1.264 \end{pmatrix} \qquad data2 = \begin{pmatrix} -1 \\ -1.416 \\ -1.746 \\ -2.007 \\ -2.214 \\ -2.377 \end{pmatrix}$$



Fit for Dataset 1

$$func(A, B, C) = \sum_i \left(F(t_i, A, B, C) - data1_i\right)^2$$

given $A = 1$ $B = 1$ $C = 1$

$$\begin{pmatrix} A \\ B \\ C \end{pmatrix} = minimize(func, A, B, C) = \begin{pmatrix} 1.683 \\ -1.679 \\ -0.782 \end{pmatrix}$$

Do a Restart ...

Given

$$\begin{pmatrix} A \\ B \\ C \end{pmatrix} = Minimize(func, A, B, C) = \begin{pmatrix} 2 \\ -2 \\ -0.6 \end{pmatrix}$$

$$func(A,B,C) = \sum_i \left(F(t_i,A,B,C) - data2_i\right)^2$$

Fit for Dataset 2

Given $A = 1 \quad B = 1 \quad C = 1$

$$\begin{pmatrix} A \\ B \\ C \end{pmatrix} = Minimize(func,A,B,C) = \begin{pmatrix} -2.641 \\ 1.658 \\ -0.984 \end{pmatrix}$$

Do a Restart ... *Given*

$$\begin{pmatrix} A \\ B \\ C \end{pmatrix} = Minimize(func,A,B,C) = \begin{pmatrix} -2.999 \\ 1.999 \\ -0.7 \end{pmatrix}$$

Do another Restart ... *Given*

$$\begin{pmatrix} A \\ B \\ C \end{pmatrix} = Minimize(func,A,B,C) = \begin{pmatrix} -3 \\ 2 \\ -0.7 \end{pmatrix}$$