COMS20011: Symbols, Patterns and Signals

Problem Sheet: Regression

For the data sample in the table, and a model of the form $y = w_0 + w_1 x$, a noise-level of $\sigma = 1$ and a regulariser of $\mathbf{\Lambda} = 2\mathbf{I}$, compute the regularised maximum-likelihood solution,

$$\mathcal{L}(\mathbf{w}) = \log \mathcal{N}(\mathbf{y}; \mathbf{X}\mathbf{w}, \sigma^2) - \tfrac{1}{2}\mathbf{w}^T \mathbf{\Lambda} \mathbf{w} \tag{1}$$

x	y
-2	-6.2
-1	-2.6
0	0.5
1	2.7
2	5.7