

2. A simple curve that makes a good model for the variable cost of a company, as a function of sales level x , has the form $y = \beta_1 x + \beta_2 x^2 + \beta_3 x^3$. (without a fixed cost)

Data: (4, 3.4), (6, 2.08), (8, 2.5), (10, 2.8), (12, 3.1), (14, 3.4), (16, 3.8), and (18, 4.32) with the values in thousands.

- a. use the data to produce a system of equations that satisfies the model above.
- b. give the design matrix and the parameter vector for the linear model that leads to the least squares fit of the equation above with data.
- c. Find the least squares curve of the form above for the data
- d. Use the plot function in your calculator to produce a graph of the data together with the approximating model.