

# Homework 2

June 15, 2016

## Problem 1.

Given data points  $\{(x_1 = 1, y_1 = -5), (x_2 = -1, y_2 = 1), (x_3 = 2, y_3 = 7)\}$  set up a linear system of equation to solve for the variables  $a_0, a_1, a_2$  such that for all  $1 \leq i \leq 3$  we have

$$y_i = a_2 \cdot (x_i)^2 + a_1 \cdot (x_i)^1 + a_0 \cdot (x_i)^0$$

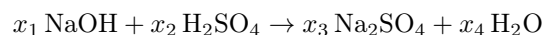
## Problem 2.

Set up and solve via Gauss-Jordan elimination the system of linear equation which determines the inverse of the matrix of

$$\mathbf{A} = \begin{pmatrix} 1 & 1 & 1 \\ 1 & \frac{1}{2}i\sqrt{3} - \frac{1}{2} & -\frac{1}{2}i\sqrt{3} - \frac{1}{2} \\ 1 & -\frac{1}{2}i\sqrt{3} - \frac{1}{2} & \frac{1}{2}i\sqrt{3} - \frac{1}{2} \end{pmatrix} \quad (1)$$

## Problem 3.

Set up the following chemical balance equation as a system of linear constraints in order to find the coefficients  $\{x_i\}_{1 \leq i \leq 4}$  via Gauss-Jordan elimination



## Problem 4.

Exercise 5 page 60 from the Book

## Problem 5.

Exercise 7 page 60 from the Book