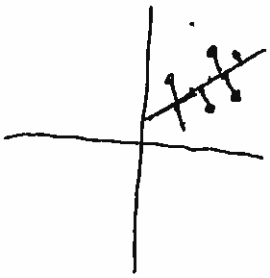
15. (Chapter 4: 20 points) Least squares can be used to find the best fit line for the points $(1,2)$, $(2,2)$, $(3,0)$. Without finding the line equation, describe how to do it, in a few sentences.

find $\vec{x}$ of $A\vec{x}=\vec{b}$ by, using $y=v_1x+v_2$, where $\vec{v}=\begin{bmatrix}v_1\\v_2\end{bmatrix}$ A

Plugging that into the normal equation $A^TA\vec{y}=A^T\vec{b}$, then solve.

~~The~~ The regression fits a best fit line by taking the average distance from the data points and plots a linear or non-linear line/curve. The best fit line is interpolated from the data points that have been collected.

Picture



$$y=x\begin{bmatrix}1\\2\\3\end{bmatrix}+\begin{bmatrix}2\\2\\0\end{bmatrix}$$