lecture_09

February 16, 2017

1 Linear Algebra (Review/Introduction)

Representation of linear equations:

1. $5x_1 + 3x_2 = 1$
2. $x_1 + 2x_2 + 3x_3 = 2$
3. $x_1 + x_2 + x_3 = 3$

in matrix form:
$$\begin{bmatrix} 5 & 3 & 0 \\ 1 & 2 & 3 \\ 1 & 1 & 1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$$
$Ax = b$

1.0.1 Vectors

column vector x (length of 3):
$$\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}$$
row vector y (length of 3):
$\begin{bmatrix} y_1 & y_2 & y_3 \end{bmatrix}$
vector of length N:
$$\begin{bmatrix} x_1 \\ x_2 \\ \vdots \\ x_N \end{bmatrix}$$
The i^{th} element of x is x_i

```
In [1]: x=[1:10]
```

```
x =

    1    2    3    4    5    6    7    8    9   10
```