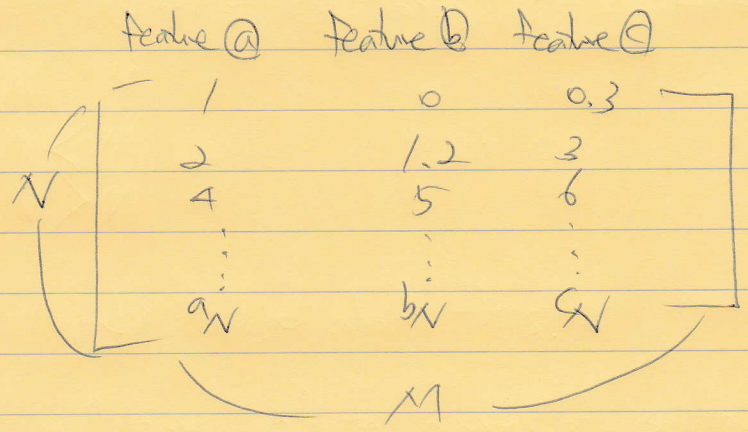
↳ Then, why am I talking about the 3 cases?

↳ Because, we usually have feature Matrix (X) and unknown vector(w) for the "Linear Prediction Model"

↳ As we know, most of our data set has below features

① Input data's shape ($N > M$).



↳ Since this is ③ case ($N > M$), we are unable to find a solution "exact"

↳ "Then, we have to try to solve the solution as much as we can."

↳ Yes! Let's try to solve the previous problem that we couldn't solve!

Let's say we have equations like this,

$$x_1 + x_2 = 2$$
$$x_2 + x_3 = 2$$
$$x_1 + x_2 + x_3 = 3$$
$$x_1 + x_2 + 2x_3 = 4.1$$

↳ These equations have no solution. Then, what if left-side equations and right-side equations don't have to be equal?

↳ Let's try to make $x_1 = x_2 = x_3 = 1$ and solve the equations.