In order to choose the Hypothesis Space, we need to find the balance between expressivity and simplicity. The expressivity is related to diversity and complexity of the hypotheses. i.e. we say that some hypothesis space is more expressive than the other if its hypotheses are more diverse and complex (informal definition, but intuitive). If we choose a hypothesis space that isn't expressive enough, we could underfit the data. For example, if the actual data are extremely non-linear, a linear hypotheses won't provide a good solution. On the other hand, if we use a very expressive hypothesis space, we risk to overfit the data. Also, we need to make sure that our model can be interpreted. For example, we could have a complicated model: $y = \sqrt{x}e^{-x} - 101x^2 + 20x - \frac{11}{x}$. It can be hard to understand the relathionship between x and y in such cases. On the other hand, a simple quadratic model e.g. $y = x^2 + x + 1$ can be easily interpreted.
Sometimes, it can be really hard to find the aforementioned balance. We should explore the dataset, use visualizations and rely on our intuition about the data.
This was a general introduction, now I will give a proposal of hypothesis space for a task of binary classification.

Binary classification

We have already mentioned (in the 3rd lecture) several hypothesis spaces that can be used for binary classification: Hyperplanes, Circles, Rectangles and Conjuction of m positive Literals.
I think that the models that calculate the probability of a binary (yes/no) event occuring are especially interesting in some cases. For example, we could use the Logistic Regression to determine if a person is likely to be infected with COVID-19 or not. In this case, the probability is really important, and not just a simple "yes or no" answer.
Applying the Logistic Regression, we can get the models of the form:

$$p(x_1 \dots x_n) = \frac{1}{1+e^{-(\beta_0+\beta_1 x_1+\beta_2 x_2+\dots-\beta_n x_n)}}.$$

This model estimates the probability of a positive class. Each such model is called a hypothesis, and our hypothesis space is given by the equation above.