

# Classification

To attempt classification, one method is to use linear regression and map all predictions greater than 0.5 as a 1 and all less than 0.5 as a 0. However, this method doesn't work well because classification is not actually a linear function.

The classification problem is just like the regression problem, except that the values we now want to predict take on only a small number of discrete values. For now, we will focus on the **binary classification problem** in which  $y$  can take on only two values, 0 and 1. (Most of what we say here will also generalize to the multiple-class case.) For instance, if we are trying to build a spam classifier for email, then  $\mathbf{x}^{(i)}$  may be some features of a piece of email, and  $y$  may be 1 if it is a piece of spam mail, and 0 otherwise.

Hence,  $y \in \{0, 1\}$ . 0 is also called the negative class, and 1 the positive class, and they are

sometimes also denoted by the symbols “-” and “+.” Given  $\mathbf{x}^{(i)}$ , the corresponding  $y^{(i)}$  is also called the label for the training example.