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given training data examples$(x_1, y_1), \ldots, (x_n, y_n)$, we construct a function $\hat{f}(x)$ for predicting future values of y given x

- Regression

- Classification

- **Unsupervised learning**

given training data examples $x_1, \ldots, x_n$, we compute some summaries such as cluster assignments, a low-dimensional projection, or parameters of the probability distribution of the x's.

- Dimension reduction (e.g., PCA, ICA.)

- Clustering

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The Supervised Learning Problem