תרגיל בית 1 בלמידת מכונה

We define $\sigma = 1, n = 1000, m = 2$ when $\beta = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$.

For these values, we got $\hat{\beta} \approx \begin{pmatrix} 0.956 \\ 2.082 \end{pmatrix}$.

For $n = 100$, $\hat{\beta} \approx \begin{pmatrix} 1.205 \\ 1.983 \end{pmatrix}$.

For $n = 10$, $\hat{\beta} \approx \begin{pmatrix} 0.990 \\ 0.841 \end{pmatrix}$.

The more samples we have, the best is the estimation. Let us define $n = 1000$. We would like to see how the variations of σ are influencing the value of $\hat{\beta}$.

For $\sigma = 0.1$, $\hat{\beta} \approx \begin{pmatrix} 0.982 \\ 2.029 \end{pmatrix}$.

For $\sigma = 0.01$, $\hat{\beta} \approx \begin{pmatrix} 1.000 \\ 2.004 \end{pmatrix}$.

The smaller σ is, the better the result of the linear regression is.