# SML

## Practice

Q1. a. Given a train dataset $D = \{(0,0), (1,2)\}$, true function $f(x) = x$, zero mean Gaussian noise with variance 1. Find the expected error on test dataset $\{(-2,-1), (2,2)\}$. Assume the prediction model to be $\hat{f}(x) = wx$, where $w$ is unknown. You need to first compute $w$ using least squares regression. Then compute the error on each test point and take average to compute test error.

b. Find the bias and variance for each test point. You need to obtain expected predictor which can be used to compute bias. For variance, you need to take expectation over dataset, that is, compute for each point in $D$ and then take average.