

Practical Exercise 4

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September 13, 2017

Problem 4.1

Construct the following vector

```
x <- rnorm(213)
```

Then use `microbenchmark` to benchmark the computation of

```
density(x[1:k], 0.2)
```

for k ranging from 2^5 to 2^{13} . Summarize the benchmarking results.

Problem 4.2

The function `density` computes (with argument `bw = 0.2` and otherwise default arguments as above) the Gaussian kernel density estimate evaluated in an equidistant grid of 512 points with a bandwidth of 0.2.

Implement your own function, `kernDens`, that computes the same as `density` does above. The intention is that you base your implementation directly on definition (10.6) in CS.

Compare the result when applied to `x` with that of `density`.

Problem 4.3

Benchmark your implementation in the same way as `density` was benchmarked. Compare the results with those for `density`.