1. Data set information: n = 275 cow and sheep yogurts were tested for the presence of some microorganisms. Variable that was observed: Ph
2. Sturges rule for number of bins in histogram
   $k = [\log_2 n + 1]$, $[\cdot]$ denotes the ceiling of a number (next integer)
3. `density` function in R. Different options for the parameter `bw` (bandwidth):
   a. `bw = "nrd"`
      As presented in class. Under this selection $h_{opt} = 1.059\tilde{s}n^{-1/5}$, $\tilde{s} = \min\left\{\frac{IQR}{1.345}, s\right\}$.
      To find this value type `bw.nrd(x)`, with `x` denoting the data.
   b. `bw = "nrd0"`
      Similar to what we presented in class. It uses a different multiplier to cover a wider range of distributions (not only normal); see Silverman's book page 48
      $h_{opt} = 0.9\tilde{s}n^{-1/5}$, $\tilde{s} = \min\left\{\frac{IQR}{1.345}, s\right\}$.
      To find this value type `bw.nrd0(x)`, with `x` denoting the data.
      This is the default choice in R.
   c. `bw = "ucv"`
      Uses unbiased cross validation to find $h_{opt.}$
      To find this value type `bw.ucv(x)`, with `x` denoting the data.
      For more info check for example https://bookdown.org/egarpor/NP-UC3M/kde-i-bwd.html#kde-i-bwd-cv
   d. `bw = "bcv"`
      Uses biased cross validation to find $h_{opt.}$
      To find this value type `bw.ucv(x)`, with `x` denoting the data.
      For more info check for example https://bookdown.org/egarpor/NP-UC3M/kde-i-bwd.html#kde-i-bwd-cv
   e. `bw = "SJ"`
      Uses the idea from Sheather and Jones (1991): find pilot estimates of the derivatives involved.
      To find this value type `bw.SJ(x)`, with `x` denoting the data.
4. `density` function in R. The number of equally spaced points (argument `n` is the function) at which the density is to be estimated. The default is 512 x's, from (`from` argument) `min(data)-3h` (the default value) to (`to` argument) `max(data)+3h` (the default value), where `data` denoting the available data, that based on we wish to perform the density estimation, and `h` is the bandwidth that we use in the function. The value `3` above is the default value of the `cut` argument.

5. `ksmooth` function in R. Uses `n.points = max(100, length(x))` for estimating the function (`x` denotes the exploratory variables data) and the function is evaluated in `x.points` that are chosen in such a way to uniformly cover the range of `x`.