1. Given a vector of data, x, compute \bar{x} and s^2 "by hand." Compare to builtin functions *mean* and *var*.

2. Plot and overplot the densities: (a) t_{ν} , (b) $\chi^2(n)$, and (c) $F(\nu_1, \nu_2)$ for a number of choices of the "degrees of freedom" parameter(s). Hint: Only produce three different graph pages. Experiment using line type or color options to overplot the traces.

3. Determine a rough polygon that approximates the boundaries of the Rice campus. Locate some 6-10 buildings that contain teaching rooms. The location of each building is given by (x_i, y_i) and the name of the building is in the *i*-th component of the vector "label." Write a *function* that has arguments

(x, y, labels, pch)

that

(a) plots the Rice campus outline

(b) plots the points (x_i, y_i) of building locations using plot character "pch"

(c) accepts one click of the mouse on the map, printing the name of the building closest to where you clicked

(d) alternatively, the input x may be a matrix of size $n \times 2$ containing the building locations with building names as the row labels; produce the same output as in (a)-(c), automatically determining which kind of input you have been given. Hints: use functions *dimnames*, *is.matrix*, *missing*, etc.