Learning outcomes: Chapter 9

1. You should know that a kernel is a non-negative, real-valued integrable function K that satisfies:

(i) $\int_{-\infty}^{\infty} K(t)dt = 1$, and

(ii) $K(-t) = K(t)$.

2. You should be able to define the *Epanechnikov*, *uniform* and *triangular* kernels; if you need to use the Gaussian kernel, this will be given to you.

3. You should be able to show that a kernel density estimator of a probability density function integrates to 1; that is,

$$\int_{-\infty}^{\infty} \hat{f}(x)dx = 1,$$

where

$$\hat{f}(x) = \frac{1}{n}\sum_{i=1}^{n} K(x - x_i).$$