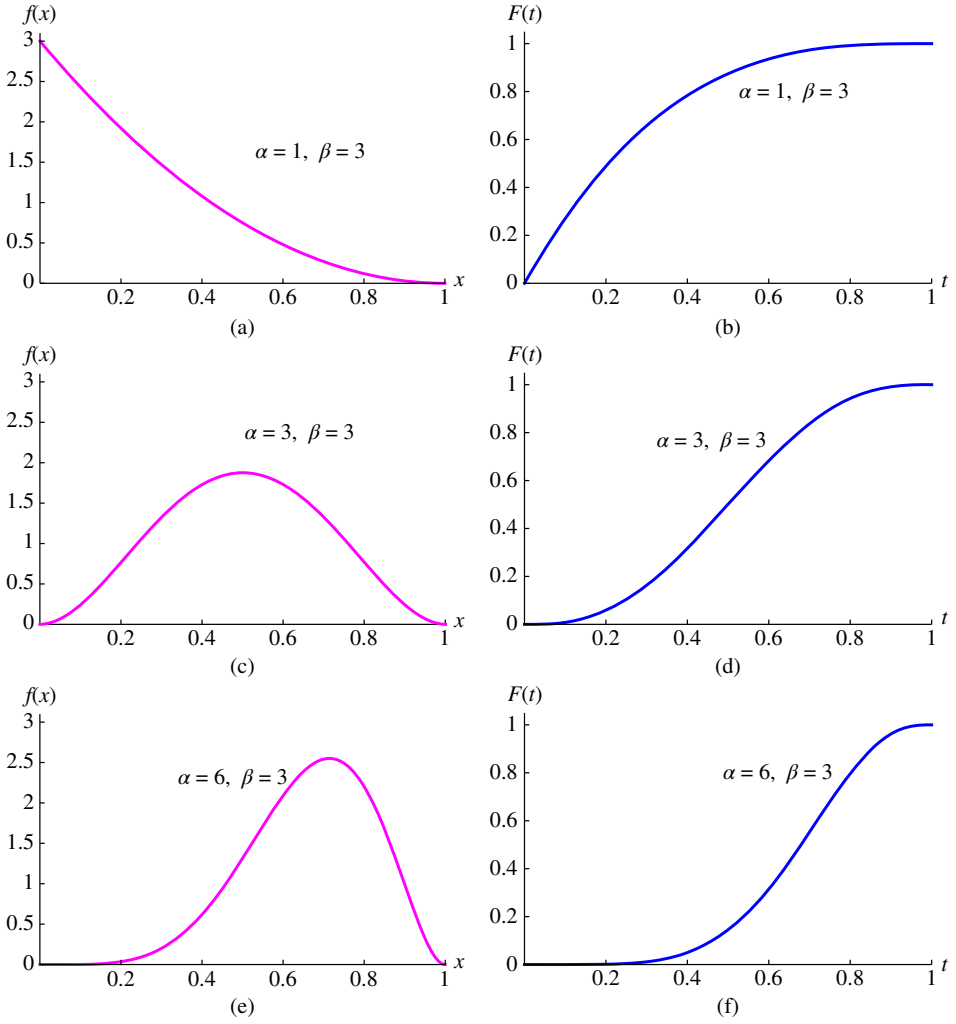

Figure 7.16 The density function (left) and the distribution function (right) of the Beta distribution for various choices of the parameters α and β.

Thus, the density takes the form

$$f(x) = \begin{cases} 30x^4(1-x), & 0 < x < 1, \\ 0, & \text{elsewhere.} \end{cases}$$

(i) For the distribution function, we have

$$F(t) = \int_{-\infty}^{t} f(x)\mathrm{d}x = \begin{cases} 0, & t < 0, \\ 6t^5 - 5t^6, & 0 \le t < 1, \\ 1, & t \ge 1. \end{cases}$$