15 CONTINUOUS DISTRIBUTIONS

The PDF of a continuous distribution

1. the total area under the PDF is 1
2. the area under the PDF between two points a and b is the probability that the random variable lies between a and b
3. PDF is positive or zero - it is zero in any range where the random variable never falls

Notation:

- **Probability Density Function (PDF)**:
  The PDF of a continuous variable X is usually denoted by $f(x)$

- **Cumulative Distribution Function (CDF)**
  As in the discrete case, the CDF is defined as the probability that the random variable X is less than or equal to some specified x.

  The CDF of a continuous variable X is usually denoted by $F(x)$ and defined by

$$F(x) = P(X \leq x) = \int_{-\infty}^{x} f(X)dX$$