Exercise 3.2. Suppose the random variable X has possible values $\{1, 2, 3, 4, 5, 6\}$ and probability mass function of the form $p(k) = ck$.

(a) Find c.
(b) Find the probability that X is odd.

Exercise 3.7. Suppose that the continuous random variable X has cumulative distribution function given by

$$F(x) = \begin{cases} 0, & \text{if } x < \sqrt{2} \\ x^2 - 2, & \text{if } \sqrt{2} \leq x < \sqrt{3} \\ 1, & \text{if } \sqrt{3} \leq x. \end{cases}$$

(a) Find the smallest interval $[a, b]$ such that of $P(a \leq X \leq b) = 1$.
(b) Find $P(X = 1.6)$.
(c) Find $P(1 \leq X \leq \frac{3}{2})$.
(d) Find the probability density function of X.