1.

a) $c = \frac{3}{4}$

b) $F(x) = \begin{cases} 0 & x \in (-\infty, -1 > \\ \frac{1}{4}(-x^3 + 3x + 2) & x \in (-1, 1 > \\ 1 & x \in (1, \infty) \end{cases}$

c) $P(X = 2) = 0, \quad P(0 < X < 10) = \frac{1}{2}, \quad P(X > 0,5) = \frac{5}{32}$

2.

a) $a = \frac{1}{2}, \quad b = \frac{1}{\pi}$

b) $f(x) = \frac{1}{\pi} \frac{1}{1 + x^2} \qquad x \in (-\infty, \infty)$

c) $x_1 = 1$

3.

a) $c = 3$

b) $F(x) = \begin{cases} 0 & x \in (-\infty, 0 > \\ 1 - e^{-x^3} & x \in (0, \infty) \end{cases}$

c) $P(0 < X < 1) = 1 - \frac{1}{e} = 0,632121$

4.

a) $c = 1$

b) $c = \frac{1}{2}$

c) $c = 1260$

5.

a) $c = 6$

b) $F(x) = \begin{cases} 0, & x \leq 0 \\ 3x^2 - 2x^3 & 0 < x \leq 1 \\ 1 & x > 1 \end{cases}$

c) $P(> 0, 2) = 0,896$

d) $E(X) = \frac{1}{2}, \quad D(X) = \frac{1}{20}$

6.

a) $a = 1$

b) $E(X) = \frac{1}{\lambda}, \quad D(X) = \frac{1}{\lambda^2}$

7.

$a = \frac{1}{\pi}, \quad P(X > 0) = \frac{1}{2}$