

1. The r.v. X has a Rayleigh distribution with density function $f_X(x) = 2xe^{-x^2}$, $x \geq 0$. Calculate the probability $P(1 \leq X \leq 2)$.
2. The r.v. X has a Rayleigh distribution with density function $f_X(x) = 2\beta xe^{-\beta x^2}$, $x \geq 0$. Determine the density function for the r.v. $Y = \sqrt{\beta}X$.
3. The r.v. X has a Rayleigh distribution with density function $f_X(x) = 2\beta xe^{-\beta x^2}$, $x \geq 0$. Determine $E(X)$ and $V(X)$ with your pocket calculator.

Answers:

1. 0.3496

2. $f(y) = 2ye^{-y^2}$, $y \geq 0$.

3. $E(X) = 0.8862/\sqrt{\beta}$, $V(x) = 0.2146/\beta$