

Chapter IV: Random Variables - Exercises

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Exercise

Let X be a random variable with the following density function

$$f(x) = \begin{cases} kx, & \text{if } 0 \leq x \leq 3; \\ k(6-x), & \text{if } 3 \leq x \leq 6; \\ 0, & \text{otherwise.} \end{cases}$$

- a) Find k such that $f(x)$ really is a density function.
- b) Find $\Pr(X > 3)$ and $\Pr(1.5 \leq X \leq 4.5)$.

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SOLUTION:

- a) $k = 1/9$;
- b) $\Pr(X > 3) = 1/2$ and $\Pr(1.5 \leq X \leq 4.5) = 3/4$.