

Answer on Question #45516 – Math – Statistics and Probability

The error of X of certain physical quantity is decided by the density function

- Determine k that renders $f(x)$ as a valid density function .
- Find the probability that a random error in measurement is less than 0.5.
- Find the probability that magnitude of error exceeds 1.

Solution:

- The area under the probability density function must equal one: $\int_{-\infty}^{\infty} f(x) dx = 1$

Answer: $k=1$.

- $p(X \leq 0.5) = \int_0^{0.5} f(x) dx$

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- $p(X \geq 1) = \int_1^{\infty} f(x) dx$

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