

## Mean and Median of a Probability Density Function

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### Learning Objectives

- Find the mean of a probability density function
  - Find the median of a probability density function
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*Find the mean of a probability density function*

1. Consider the probability density function  $f(x) = \frac{3}{4}x^2(2 - x)$ ,  $0 \leq x \leq 2$ . Find the mean ( $\mu$ ) of the distribution.

*Find the median of a probability density function*

2. Using the same probability density function as in Problem (1), find the median ( $\tilde{\mu}$ ) of the distribution. Is it the same as the mean?

- $\mu = \int_a^b xf(x)dx$
- $\tilde{\mu} = c$  where  $\int_a^c f(x)dx = \frac{1}{2}$

## ANSWER KEY

1.  $\mu = 1.2$
2.  $\tilde{\mu} \approx 1.22854$ , they are not the same