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Bookmark

Exercise: Recognizing normal PDFs

(2/2 points)

The random variable X has a PDF of the form

$$f_X(x) = ce^{-4x^2 - 24x + 30},$$

where c is a normalizing constant. Then,

a) $\mathbf{E}[X] =$ ✓ Answer: -3

b) $\mathbf{var}(X) =$ ✓ Answer: 0.125


Answer:


a) We recognize this as a normal PDF. The mean is at the peak of the PDF, which is found by setting the derivative of the exponent to zero: $-8x - 24 = 0$, or $x = -3$.


b) The variance is $1/(2\alpha)$, where α is the positive coefficient associated with the term x^2 . Thus, the variance is $1/8$.


You have used 2 of 2 submissions


Unit overview


**Lec. 14:
Introduction to
Bayesian inference**
Exercises 14 due Apr
06, 2016 at 23:59 UTC 

**Lec. 15: Linear
models with
normal noise**
Exercises 15 due Apr
06, 2016 at 23:59 UTC 

Problem Set 7a
Problem Set 7a due
Apr 06, 2016 at 23:59
UTC 

**Lec. 16: Least
mean squares
(LMS) estimation**
Exercises 16 due Apr
13, 2016 at 23:59 UTC 

**Lec. 17: Linear
least mean
squares (LLMS)
estimation**
Exercises 17 due Apr
13, 2016 at 23:59 UTC 

Problem Set 7b
Problem Set 7b due
Apr 13, 2016 at 23:59
UTC 

Solved problems

**Additional
theoretical
material**

Unit summary

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