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## 3. Exercise: Recognizing normal PDFs

Exercises due Apr 8, 2020 05:29 IST Completed

Exercise: Recognizing normal PDFs

2/2 points (graded)

The random variable X has a PDF of the form

$$f_{X}\left( x
ight) =ce^{-4x^{2}-24x+30},$$

where c is a normalizing constant. Then,

a) 
$$\mathbf{E}\left[X
ight]=igg[ ext{-3}$$

## **Solution:**

- 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  $\alpha$  is the positive coefficient associated with the term  $x^2$ . Thus, the variance is 1/8.

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You have used 2 of 3 attempts

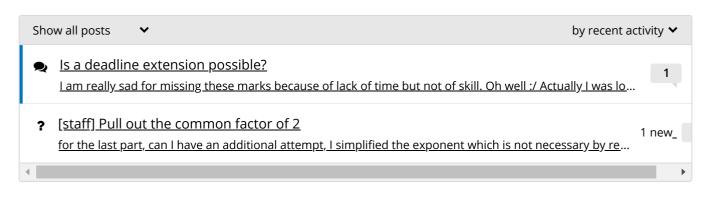
**1** Answers are displayed within the problem



## Discussion

**Hide Discussion** 

**Topic:** Unit 7: Bayesian inference:Lec. 15: Linear models with normal noise / 3. Exercise: Recognizing normal PDFs



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