# 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

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

where $c$ is a normalizing constant. Then,

a) $\mathbf{E}[X] =$ -3 ✔ **Answer:** -3

b) $\mathrm{Var}(X) =$ 1/8 ✔ **Answer:** 0.125

**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 $1/8$.

Submit You have used 2 of 3 attempts

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

Show all posts by recent activity

Is a deadline extension possible? 1

I am really sad for missing these marks because of lack of time but not of skill. Oh well :/ Actually I was lo...

[staff] Pull out the common factor of 2 1 new

for the last part, can I have an additional attempt, I simplified the exponent which is not necessary by re...