

### 3. Exercise: Recognizing normal PDFs

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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)  $\mathbf{E}[X] =$   ✓ Answer: -3

b)  $\mathbf{Var}(X) =$   ✓ 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  $1/8$ .

提交

You have used 2 of 3 attempts

❗ Answers are displayed within the problem

讨论

显示讨论

Topic: Unit 7 / Lec. 15 / 3. Exercise: Recognizing normal PDFs