Bookmarks

- Unit 0: Overview
- Entrance Survey
- Unit 1: Probability models and axioms
- Unit 2: Conditioning and independence
- Unit 3: Counting
- Unit 4: Discrete random variables
- Exam 1
- Unit 5: Continuous random variables
- **Unit 6: Further topics on random variables**

Unit overview

Lec. 11: Derived distributions
Exercises 11 due Mar 30, 2016 at 23:59 UTC

Unit 6: Further topics on random variables > Problem Set 6 > Problem 2 Vertical: Functions of a standard normal

Bookmark

Problem 2: Functions of a standard normal

(3/3 points)
The random variable X has a standard normal distribution. Find the PDF of the random variable Y, where:

1. $Y = 3X - 1$.

- ○ $f_Y(y) = \frac{1}{3} f_X(3(y+1))$
- ○ $f_Y(y) = 3 f_X(3(y+1))$
- ◉ $f_Y(y) = \frac{1}{3} f_X(\frac{y+1}{3})$ ✔
- ○ $f_Y(y) = 3 f_X(\frac{y+1}{3})$

2. $Y = 3X^2 - 1$. For $y \geq -1$,

- ○ $f_Y(y) = \frac{1}{6} \cdot \sqrt{\frac{3}{y+1}} f_X\left(\sqrt{\frac{y+1}{3}}\right)$
- ○ $f_Y(y) = \frac{1}{3} \cdot \sqrt{\frac{y+1}{3}} f_X\left(\sqrt{\frac{y+1}{3}}\right)$
- ◉ $f_Y(y) = \frac{1}{3} \cdot \sqrt{\frac{3}{y+1}} f_X\left(\sqrt{\frac{y+1}{3}}\right)$ ✔
- ○ $f_Y(y) = \frac{1}{3} \cdot \frac{y+1}{3} f_X\left(\sqrt{\frac{y+1}{3}}\right)$

- $f_Y(y) = \frac{1}{3} \cdot \frac{3}{y+1} f_X\left(\sqrt{\frac{y+1}{3}}\right)$

You have used 2 of 2 submissions

DISCUSSION

Click “Show Discussion" below to see discussions on this problem.