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2.7 on HW 2

Hey folks. Does anyone know how to do 2.7 on the homework from Prof. Barron's book. I looked at the answer key and it didn't really clear anything up.

thanks!

hw2

Edit good question | 0 Updated 6 years ago by Greg boudreaux

the students' answer, *where students collectively construct a single answer*

Actions

For part a, we know that $\int_{-\infty}^{\infty} f(x)dx = 1$ for one of the requirements of a pdf. Then we would evaluate each part of the piecewise function like so:

$$\int_{-\infty}^{-3} 0dx + \int_{-3}^{-2} (cx+3)dx + \int_{-2}^{2} 0dx + \int_{2}^{3} (3-cx)dx + \int_{3}^{\infty} 0dx = 1$$

After integrating and evaluating, it is essentially just solving for c. I believe that part b follows from this (not sure).

-Charles

~ An instructor (E.N. Barron) endorsed this answer ~

Edit thanks! | 2 Updated 6 years ago by Charles Hwang

the instructors' answer, *where instructors collectively construct a single answer*

Once you know what c is from part (a), to find the distribution function calculate $F(x) = \int_{-\infty}^{x} f(y)\ dy$ for all values of x. For example, if $x \leq -3, F(x) = 0$, and if $-3 \leq x \leq -2$,
$F(x) = \int_{-\infty}^{x} f(y)\ dy = \int_{-3}^{x} cy + 3\ dy = cy^2/2 + 3y\Big|_{-3}^{x}$.

thanks! | 0 Updated 6 years ago by E.N. Barron

followup discussions *for lingering questions and comments*