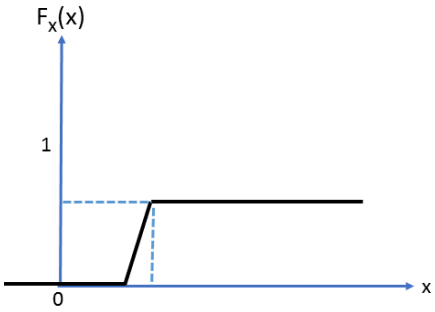
2. CDF

Problem 2. CDF

3/4 points (graded)

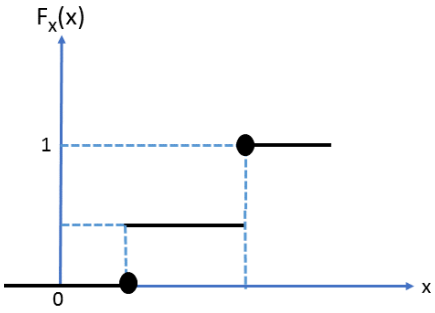
For each one of the following figures, identify whether it is a valid CDF. The value of the CDF at points of discontinuity is indicated with a small solid circle.

1.



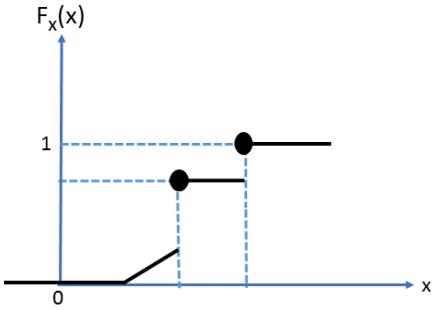
It is not a valid CDF ▼ ✔ **Answer:** It is not a valid CDF

2.



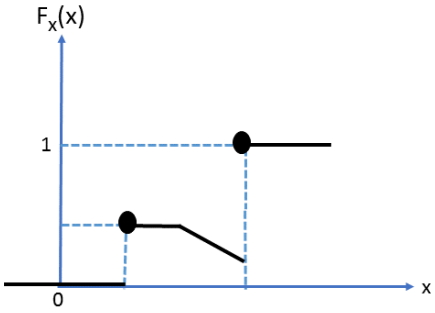
It is a valid CDF ▼ ✖ **Answer:** It is not a valid CDF

3.



It is a valid CDF ▾ ✔ **Answer:** It is a valid CDF

4.



It is not a valid CDF ▾ ✔ **Answer:** It is not a valid CDF

Solution:

1. No, because $\lim_{x\to\infty} F_X(x) \neq 1$.

2. No, because it is not right-continuous.

3. Yes, it is a valid CDF (limiting values are as required, and it is monotonic, and right-continuous).

4. No, because it is not monotonic.

提交 You have used 1 of 1 attempt

ℹ Answers are displayed within the problem

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I don't understand the answer to Part (2) "not right-continuous"

question posted 4 days ago by **birdsarah**

Can someone elaborate a little further on why the second plot is not a valid CDF.

此帖对所有人可见。

SarahMass

4 days ago - 4 days ago 前被 **e_kizildag** (Staff) 标记为答案

Right continuous means that $\lim_{x \to a^+} f(x) = f(a)$. This is read as "The limit as f of x approaches a from the right is the function value at a." This means that at a jump discontinuity the point that the function is defined is on the right and a filled in dot is shown in a graph to represent this while the left side of the jump should have the equivalent of an open circle to show that that point is not included in the function. In this case the function "jumps" or is discontinuous when there is a 'jump' in the Pdf I believe the professor called it a step increase. So the pdf is zero until $x = a$. At a the cdf would increase instantaneously so that the CDF at a is now equal to the the value of the pdf at a and eventually grows towards 1.

The thing to notice here is that anytime there is a step increase the cdf's function value will be defined on the right of the jump not the left. If those points had been on the right of each of those jumps then the cdf would have been valid.

I hope I am explaining this well enough. If you go to youtube and look up one sided continuity, or left continuous and right continuous. This can only happen when there is a jump discontinuity.

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