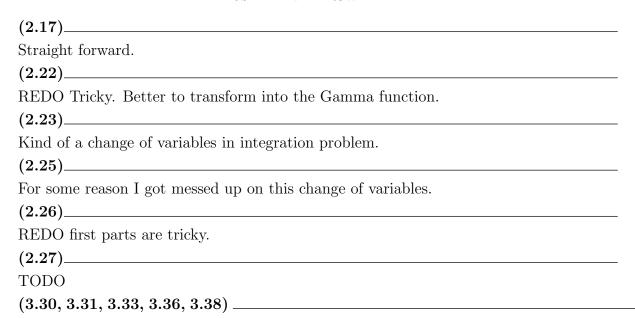
CASELLA AND BERGER NOTES AND EXERCISES - CHAPTER 2

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Chapter 2 Exercises

Using this problem set: http://www.stat.ufl.edu/jhobert/sta6326
Chapter 2: 1, 2, 3, 4, 9, 11, 12, 13, 14, 16, 17
Chapter 2: 22, 23, 25, 26, 27, 30, 31, 33, 36, 38
(2.1)
Apply change of variables for each.
Check that the given PDF's are PDF's and then the result follows.
(2.2)
Apply change of variables again. Straight forward.
(2.3)
This one tripped me up for some reason. Let B be a measurable set in the image
of Y. Since X is discrete $B = \{b\}$. Then $P(Y \in B) \iff P(Y = b) \iff P(X = b)$
$b/(1-b)) = f_X(b/(1-b))$
It is much straight forward to just change the variables this way in my opinion
instead of using distribution functions or something.
(2.4)
This is clear by the definition and additivity of the integral.
(2.9)
The distribution function.
(2.11)
TODO COME BACK TO THIS
(2.12)
(2.14)
Very nice application of Fubini's Theorem.
(2.16)
TODO



These are all pretty straight forward power series transformation stuff.

Notes

8 / 20 _____ 8 / 21 ____

Changing the variables in measures should really go like this:

For any measurable set $B, P(Y \in B) \iff \cdots$ And use change of variables.

Example: $P(-t \le Y \le t)$ for continuous or P(X = t) for discrete since these are the measurable sets.

USE THIS FORMULA WHEN CHANGING VARIABLES $P(X \in B) \iff P(b_1 \le X \le b_2)$ or $P(X \in B) \iff P(X = t)$ 8 / 22

I really forgot how to use by parts. It really follows from FTC2 (See Munkres).