

**Statistics 630 - Assignment 3**  
(due Friday, 24 September 2021)

**Instructions:** (same as those given in the first assignment)

The material covered by this assignment is primarily in Lectures 06–09 and Chapter 2 of the textbook.

1. Chapter 2 Exercise 2.3.18.
2. Chapter 2 Exercise 2.4.4(a,b,c). For each part, once you have the value for  $c$ , write an expression for  $f(x)$  that is valid for all real  $x$ , using an indicator function as needed. Also – find the cdf for each.
3. Chapter 2 Exercise 2.4.19. Use an indicator function to give an expression for  $f(x)$  that is valid for all real  $x$ .
4. Chapter 2 Exercise 2.4.22. Hint: split the integral for the cases  $x \leq 0$  and  $x > 0$ .
5. Chapter 2 Exercise 2.5.3(a,c,d,f,g). Give reasons if you say “no”.
6. Chapter 2 Exercise 2.5.5. Use the `pnorm` function in R. Add
  - (d) Find the 40<sup>th</sup> and 77<sup>th</sup> percentiles. Use the `qnorm` function in R.
7. Chapter 2 Exercise 2.5.8. Note: it should say  $F_Y(y) = 1 - (1 - y)^3$  for  $1/2 \leq y \leq 1$ . (Why is the definition shown in the book not a valid cdf?)
8. Chapter 2 Exercise 2.5.13.
9. Chapter 2 Exercise 2.5.19.
10. Chapter 2 Exercise 2.5.21. Add
  - (b) Find the quantile function.
11. Chapter 2 Exercise 2.5.24. Add
  - (b) Find the quantile function. Hint: consider the cases  $p \leq 0.50$  and  $p > 0.50$  separately.
12. Chapter 2 Exercises 2.6.1, 2.6.4, 2.6.9, 2.6.18. Assume  $\beta > 0$  for 2.6.18.