

**Quiz 3 – 11 September 2019**

**Instructions.** You have 10 minutes to complete this quiz. You may use your calculator. You may not use any other materials (e.g., notes, homework, books).

Problem	Weight	Score
1	2	
2	2	
3	1	
Total		/ 50

Consider the random variable  $X$  with cdf

$$F_X(a) = \begin{cases} 0 & \text{if } a < 0 \\ \frac{a}{4} & \text{if } 0 \leq a \leq 4 \\ 1 & \text{if } a > 4 \end{cases}$$

**Problem 1.** Construct a random variate generator for  $X$ . Your solution should be in the form: “ $X = \dots$  where  $U \sim \text{Uniform}[0,1]$ .”

Problems 1-3 of this quiz come from Problem 3.17a in the textbook (using  $\alpha = 0$  and  $\beta = 4$ ), assigned for homework. Take a look at the solutions for that homework problem for hints on how to get started.

**Problem 2.** Suppose you have access to a function `random()` that generates random variates of  $\text{Uniform}[0,1]$ . Briefly describe how you would use your random variate generator in Problem 1 to generate random variates of  $X$ .

**Problem 3.** Using your answer to Problem 2, what value is generated if `random()` returns the value 0.1?