Answers to Practice Test 2

Problem 1

1.

2.

$$CDF(x) = \begin{cases} \frac{1}{2}e^x, & \text{if } x \le 0 \\ 1 - \frac{1}{2}e^{-x}, & \text{if } x > 0 \end{cases}$$

3.

$$QF(x) = \begin{cases} \ln(2f), & \text{if } f \le \frac{1}{2} \\ -\ln(2 - 2f), & \text{if } f > \frac{1}{2} \end{cases}$$
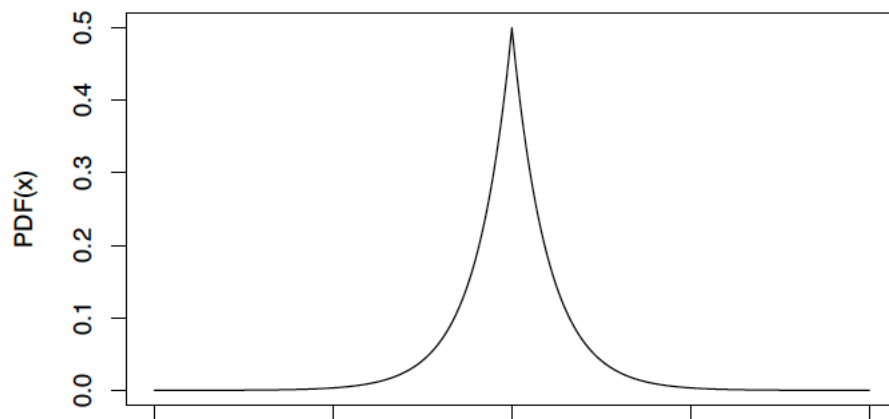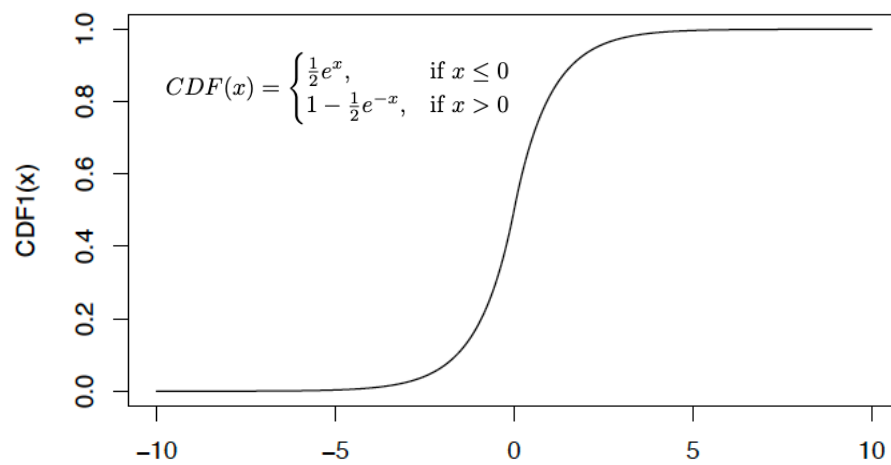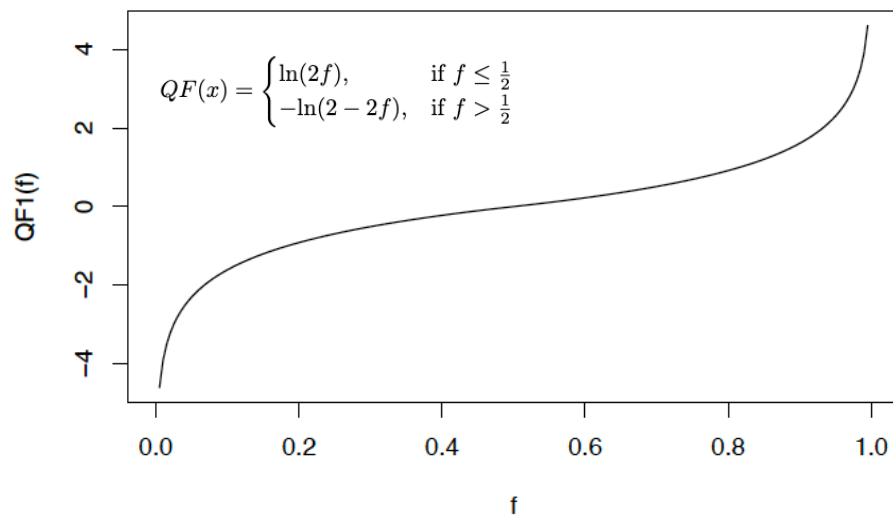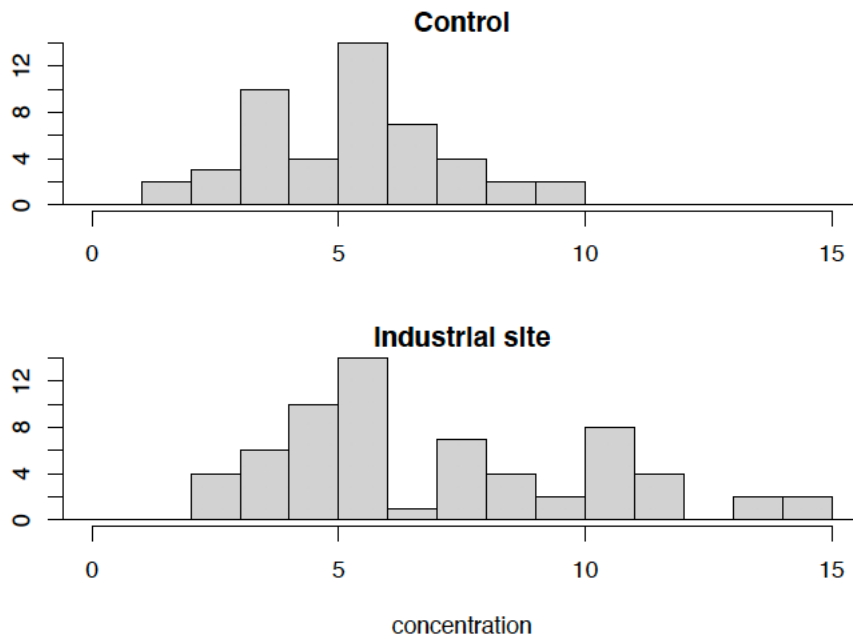

4. 0
5. 0
6. 0
7. 3.912
8. Leptokurtic

Problem 2

1.

Control

Industrial site

concentration

2. Control: 5.37 (CI 4.59-6.16)
   Industrial: 7.03 (CI 5.86-8.20)
3. No (p=0.0072)
4. Yes, the mean for the industrial group is higher (p=0.02)
5. 0.007 (alternatively, 0)
6. ~39 from control group and ~118 from industrial group

Problem 3

1. Linear
2. Nested
3. Can rule out m0 and m1 (p=0.01694 for ruling out m1)
4.

	Est.	SE
k	1.020	0.029
A1	0.927	0.041
B1	-0.232	0.041
A2	0.068	0.041
B2	-0.097	0.041

Note – Marking will be based on both the methods and the results. It may be possible to obtain partial credit from a wrong answer, or to lose credit with a nearly-correct answer if the methodology is incorrect or not documented. Some questions may have multiple, equally valid answers. Submissions will require a complete knitted Rmarkdown file including all code chunks.