Exercise 3

Task 1
Sort the array

$$[7, 3, 8, 1, 5, 2, 4, 6]$$

using Heapsort and then sort it using Bottom-up Heapsort. How many comparisons do you need in each case?

Task 2
Show Jensen's inequality (slide 62).

Task 3 (Slide 66)
Let $n \in \mathbb{N}$. Show that the function $f(x) = \log_2(\log_2(n) - x)$ is concave on $(-\infty, \log_2(n))$.