Exercise 4

Task 1
Sort the following list via Radixsort.

$$[456, 128, 752, 956, 185, 361, 678, 462]$$

Task 2
Show Jensen's inequality (slide 8).

Task 3
Is there a comparison-based sorting algorithm and a number $c > 0$ such that the following holds?: The proportion of all input lists of length n on which the algorithm makes at most $c \cdot n$ comparisons is at least $\frac{1}{2^n}$.

Task 4
Show that the median of five numbers can be computed using six comparisons.

Task 5
Does the algorithm "Median of the Medians" run in linear time, if one uses blocks of three or blocks of nine?