Search engine evaluation

1. A collection of documents contains 20 documents that are relevant for a given query. For this query, the search engine returns 8 relevant and 10 not relevant documents.
   
   a. Compute precision and recall of this search result as well as the F\textsubscript{1}-measure.

   b. What are the advantages of the F-measure compared to the arithmetic mean of precision and recall?

2. The following list (left -> right) represents the order of the relevant (R) and not relevant (N) search results, that are returned from a document collection for a query. In total, this document collection contains 8 documents that are relevant for this query.

   \[
   \text{R R N N N N N R N R N N R N N N N R R N N N N R}
   \]

   a. Compute the top-20 precision and the F\textsubscript{1}-measure for this result.

   b. Compute the not interpolated precision at the 25% recall.

   c. Compute the interpolated precision at the 33% recall.