1. Let \( f, g : [a, b] \to \mathbb{R} \) be Riemann integrable and \( \lambda, \mu \in \mathbb{R} \). Show that \( \lambda f + \mu g \) is Riemann integrable and we have
\[
\int_{[a,b]} (\lambda f + \mu g) = \lambda \int_{[a,b]} f + \mu \int_{[a,b]} g
\]

2. Let \( f : [a, b] \to \mathbb{R} \) be a bounded function, which is continuous in \([a, b]\backslash \Sigma\). Assume that \( \Sigma \) is a countable set \( \Sigma = \{c_1, c_2, \ldots\} \). Without using Riemann-Lebesgue theorem, show that \( f \) is Riemann integrable.

3. Let \( f : [a, b] \to \mathbb{R} \) be Riemann-integrable and let \( g : [a, b] \to \mathbb{R} \) such that \( f(x) = g(x) \) for all \( x \in [a, b]\backslash \Sigma \) where \( \Sigma = \{x_1, \ldots, x_n\} \). Show that then \( g \) is Riemann integrable in \([a, b]\) and we have
\[
\int_{[a,b]} f = \int_{[a,b]} g.
\]

4. (bonus question) Prove the positive part of the Riemann-Lebesgue theorem:

Let \( f : [a, b] \to \mathbb{R} \) be bounded and assume that \( f : [a, b] \to \mathbb{R} \) is continuous in \([a, b]\backslash \Sigma\) for some \( \Sigma \subset \mathbb{R} \) with Lebesgue measure zero. Show that \( f \) is Riemann-integrable.