1. Suppose $f, g \in \mathcal{R}[a, b]$ show:
   (a) if $k \in \mathbb{R}$ then $kf \in \mathcal{R}[a, b]$.
   (b) if $f(x) \leq g(x)$ for all $x \in [a, b]$ then $\int_a^b f \leq \int_a^b g$.
2. Let $f(x) = x$ and $a < b$. Show that $f \in \mathcal{R}[a, b]$ and find $\int_a^b f$.
3. Let $g(x) = 4x + 3$. Show $g \in \mathcal{R}[1, 4]$ and find $\int_1^4 g$.
4. Suppose $f \in \mathcal{R}[a, b]$ and $c \in \mathbb{R}$, we define $g : [a + c, b + c] \to \mathbb{R}$ by $g(x) = f(x - c)$. Prove that $g \in \mathcal{R}[a + c, b + c]$ and:
$$\int_{a+c}^{b+c} g = \int_a^b f$$
   The function g is called to c-translate of f.