Homework 1 Problems:

(For 12 or 13th edition) Section 15.2: 54, 56, 64, 66, 78; Section 15.5: 30, 32, 34, 36, 44

1. Let A be a rectangle in $\mathbb{R}^n$. Let f, g: A→$\mathbb{R}$ be integrable functions. Show that

i.) L(f, P) + L(g, P) $\leq$ L(f + g, P) and U(f + g, P) $\leq$ U(f, P) + U(g, P) for any partition P of A,

ii.) Show that f + g is integrable and $\int_A (f+g) = \int_A f + \int_A g$,

iii.) Show that $\int_A cf = c\int_A f$ for any constant c,

iv.) Show that $\int_A f \leq \int_A g$ if $f \leq g$.