## Homework 4

1 Show that the function  $f: [0,1] \to \mathbb{R}$  defined by  $f(x) = x^2$  is Riemann integrable. Your proof should use Lemma 11.11 and the identity

$$\sum_{j=1}^{n} j^2 = \frac{n(n+1)(2n+1)}{6}.$$

2 Suppose  $f : [-1,1] \to \mathbb{R}$  takes nonnegative values. Show that if f is Riemann integrable and continuous at 0 and f(0) > 0 then

$$\int_{-1}^{1} f \, dx > 0.$$