

Homework 3 additional problem.

1. Let  $E \subset [a, b]$ . Prove that  $E$  is Jordan measurable if and only if  $\chi_E$  is Riemann integrable over  $[a, b]$  and that in that case  $\int_a^b \chi_E(x) dx = m(E)$ , the Jordan measure of  $E$ . (Use the Darboux definition of Riemann integral as stated in class in terms of upper and lower sums.)