Fachbereich Mathematik
Dr. L. Leuştean
K. Altmann, E. Briseid, S. Herrmann

TECHNISCHE
UNIVERSITÄT
DARMSTADT

30.05.2006

7. Tutorial Analysis II for MCS
Summer Term 2006

(T7.1)

Let $f, g : [a, b] \to \mathbb{R}$ be such that $\{x : x \in [a, b] \land f(x) \neq g(x)\}$ is finite. Show that f is integrable if and only if g is integrable, and that we in this case have $\int f = \int g$.

(T7.2)

Let $f : [a, \infty[\to [0, \infty[$ be an increasing function. Prove the following.

(i)
$$\lim_{x \to \infty} f(x) = \begin{cases} \|f\| & \text{if } f \text{ is bounded,} \\ \infty & \text{otherwise.} \end{cases}$$

(ii) f is bounded if and only if $(f(n))_{n \geq a}$ is bounded.