Ergodic Theory: Home Assignment 3

Let $(X, \mathcal{B}, T, \mu)$ be a probability preserving transformation. Let $g : X \to \mathbb{R}^+$ be a bounded measurable function. Show that $\int g \circ T d\mu = \int g d\mu$.

Hint: Try approxiating g uniformly by simple function, show the claim for simple functions, and deduce the claim for g.

Good luck!