Math 303, Homework 11

Due November 21, 2019

Suppose you have a metal washer of the form $\{(r, \theta) : 1 \leq r \leq 2\}$. The inside circle is heated to a fixed temperature distribution $f(\theta)$, and the outside circle is heated to a fixed temperature distribution $g(\theta)$.

(a) Find the general formula for the steady-state temperature function $u(r, \theta)$ on the washer.

(b) Find u when $f(\theta) = \cos(\theta)$ and $g(\theta) = \sin(\theta)$.

(c) Find u when $f(\theta) = 1$ and $g(\theta) = 2$.