

**Mathematics 3271 3.0**  
**Fall 2018**  
**Assignment 7**

1. Section 28 in Weinberger: 1
2. Section 29 in Weinberger: 2
3. Find the solution  $u$  of the boundary value problem for the Poisson equation given by

$$\begin{cases} \frac{\partial^2 u}{\partial r^2} + \frac{1}{r} \frac{\partial u}{\partial r} + \frac{1}{r^2} \frac{\partial^2 u}{\partial \theta^2} = 3r \sin^2 \theta, & 0 \leq r < R, -\pi \leq \theta \leq \pi, \\ u(R, \theta) = 0, & -\pi \leq \theta \leq \pi. \end{cases}$$