

# Homework 7

Discussion Sections: April 29 and May 3

1. Pinchover and Rubenstein Chapter 7: 7.2, 7.5, 7.7, 7.8, 7.10, 7.14a, 7.15
2. Levy and Shearer Chapter 8: 7
3. Show the following:
  - (a) If  $u(x, y)$  is a harmonic function, then so is  $u(x - a, y - b)$  for any constants  $a$  and  $b$ .
  - (b) If  $w(r, \theta)$  is a harmonic function, then so is  $w(r, \theta + \gamma)$  for any constant  $\gamma$ .
  - (c) If  $u(x, y)$  is a harmonic function, then so is  $u(x/\delta, y/\delta)$  for any constant  $\delta$ .
4. Carefully work through the proof of Theorem 7.10 in Pinchover and Rubenstein.
5. Work through section 7.8 in Pinchover and Rubenstein to derive Poisson's integration formula.

Note that this is the minimum number of problems you should be solving. Other problems in Pinchover and Rubenstein Chapter 7, and in Levy and Shearer Chapters 8 are good practice problems.