Assignment #6

Due Monday, 21 March 2016, at *NOON* in my office mailbox in Chapman 101, the DMS office

Please read Sections III.2 and III.4 in Gamelin. Also read III.3 and III.5, but note that I will skip them in lecture, and assign no problems on them.

This is a deliberately short assignment.

Do the following Exercises from the book, and Problem P1. I have circled the Exercises I will grade, and I will also grade P1. (These are also the ones for which I will write complete solutions.)

Section III.2, page(s) 82–83, Exercises:

(1 (b) (d))

(2)

3

Section III.4, page(s) 86–87, Exercises:

(1)

3

Problem P1: Let $u(x,y) = \mathrm{Re}(z^3)$. Confirm that u is harmonic. For the circle centered at $z_0 = 1 + i$ with radius $r = \sqrt{2}$, confirm the conclusion of the Mean Value Property on page 85. That is, calculate both sides and check they are equal:

$$u(z_0) = \int_0^{2\pi} u(z_0 + re^{i\theta}) \, \frac{d\theta}{2\pi}.$$