Assignment #4

Due Wednesday, 24 February 2016, at the start of class

Please read Sections II.2–II.7 in Gamelin. I will not assign problems from II.4. There will be problems from II.7 on the next Assignment.

Do the following Exercises. The circled Exercises are the ones I will grade, and they are the ones for which I will write complete solutions.

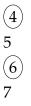
Section II.2, page(s) 46, Exercises:



5

(Please interpret "differentiating f(z) by hand" as "use limit (2.2) or (2.4) to compute the derivative. You cannot just use the rule for differentiating z^m .)

Section II.3, page(s) 50, Exercises:



Section II.5, page(s) 57–58, Exercises:

$$(1 (a) (c) (f)$$

$$1 (b) (d) (e)$$

$$(2)$$

$$(1f h(z) = steps then (You may b)$$

(If h(z) = u + iv and z = x + iy then you know equations for u and v. Algebraic steps then show that u and v solve the Cauchy-Riemann equations.)

(You may have seen this formula in another reference. Nonetheless, derive it. 5 Start with the formulas $x = r \cos \theta$, $y = r \sin \theta$ and derive the polar form from the cartesian form $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0.$)

Section II.6, page(s), Exercises:

