Homework 2

Due Tuesday, February 7 at 10pm. Please upload a legible pdf to Gradescope.

You may work together, but the solutions must be written up in your own words.

§# refer to Brown and Churchill, Ninth Edition

Hand in:

§14 #5, 8, 9

§18 #5, 10

§20 #8

§24 #1, 2

Additional #1

Show that a sequence $(z_n) = (x_n + iy_n)$ of complex number converges to $z = x + iy$ if and only if the sequences of real numbers (x_n) and (y_n) converge to x and y respectively.

Additional #2

Let $f(z) = \frac{\bar{z}^2}{z}$.

a) Prove that f is not differentiable at 0 (see §20 #9)

b) Write $f(z)$ in the form $u(x, y) + iv(x, y)$. Compute u_y for $(x, y) \neq (0, 0)$ and for $(x, y) = (0, 0)$. Show that u_y is not continuous at $(0, 0)$.

Recommended, but don't hand in:
§14 #2, 3, 4

§18 #1, 8, 9, 11, 13

§24 #2