Assignment 4; Due Friday, February 3

- 15.6ab
- (graduate students only) 15.16c
- (graduate students only) 15.18fg.
- (graduate students only) 15.19ae.
- 16.11bf
- 16.11g, parts ii, iii, iv. These exercises require some explanation. Consider case ii. We are to take $C^*$, the set of nonzero complex numbers, and put an equivalence relation on this set by making $z$ equivalent to $2z$. Since this holds for every $z$, $2z$ is equivalent to $2(2z) = 4z$, etc. Similarly $\frac{1}{2}z$ is equivalent to $2\left(\frac{1}{2}z\right) = z$. The author neatly summarizes all of these equivalences by defining $\varphi(z) = 2z$ and requiring that $z \sim \varphi^n(z)$ for any $n \in \mathbb{Z}$.

Below is a picture of this situation. Every point is equivalent to a point in the shaded region, and boundary points of this shaded region are equivalent as indicated.