

## 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  $2(\frac{1}{2}z) = z$ . 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.

