Mathematics 552, Homework # 3.

1. Page 35 1, 2, 3, 4. (I have not yet defined ***bounded*** in class. In case I forget see page 34 of the text.)

2. Pages 44–45. 1abf, 2abc, 3abc, 4ab, 5abcde, (I know that we have done parts of 5 in class, but it is important so I want to emphasize it.) 6abc (Part c of this problem is a good deal of fun.)

3. Let $f(z) = \frac{1}{z}$. Assume that $r > 0$ and that a is a complex number with $|a| \neq r$ (this just means that the circle $|z - a| = r$ does not pass through the origin). Show the image of $|z - a| = r$ under the maping $f(z)$ is also a circle. Can you find a formula for the center and radius of the image circle?