Math 403, section 5

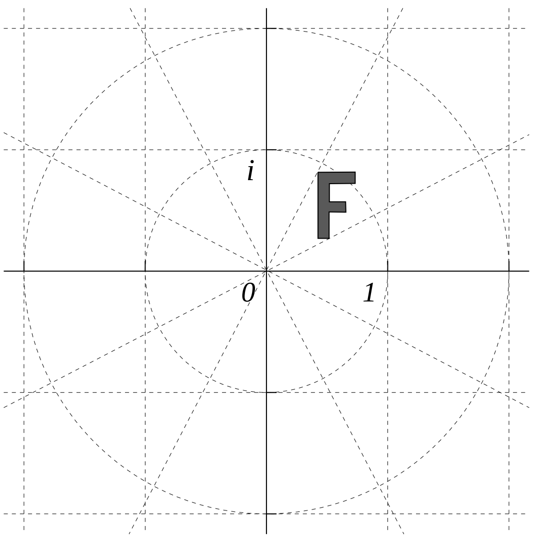
The return of F!

February 5, 2001

~~Name~~ This is for your private use during class, not to be handed in!

I'd like you to draw what happens to a certain subset of the complex numbers, the solid **F** shown in the first picture, under the transformations listed in the other two pictures. First, please answer the questions to the right of the initial graph. The "diagonal" lines are supposed to be $\frac{\pi}{6}$ apart from each other and from the coordinate axes.

The original **F**.



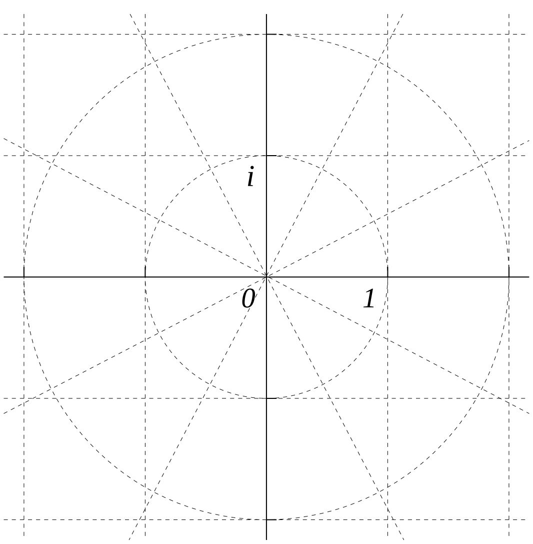
Indicate the approximate interval of r values occuring *anywhere* on the region **F**.

$r = 0$ $\quad$ $r = 1$ $\quad$ $r = 2$

Indicate the approximate interval of θ values occuring *anywhere* on the region **F**.

$\theta = 0$ $\quad$ $\theta = \frac{\pi}{6}$ $\quad$ $\theta = \frac{\pi}{3}$ $\quad$ $\theta = \frac{\pi}{2}$

What happens to **F** when $z \mapsto z^2$.



What happens to **F** when $z \mapsto 1/z$.