1. Suppose that $A = \begin{pmatrix} 4 & 0 \\ 0 & 3 \end{pmatrix}$ and $B = \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$. We regard A and B as maps from $\mathbb{R}^2$ to $\mathbb{R}^2$ by matrix multiplication (on the left, so A evaluated at $(1,2)$ is $(4,6)$, for example), and we denote by C the unit circle centered at the origin.

(a) Describe the image of C under the map AB.

(b) Describe the image of C under the map BA.