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 \( BA \).