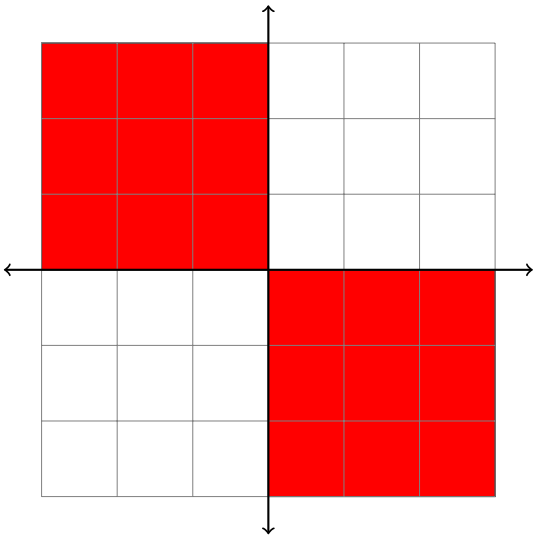
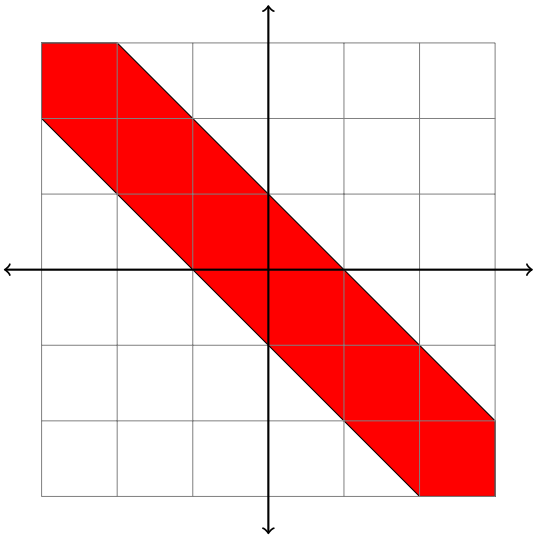
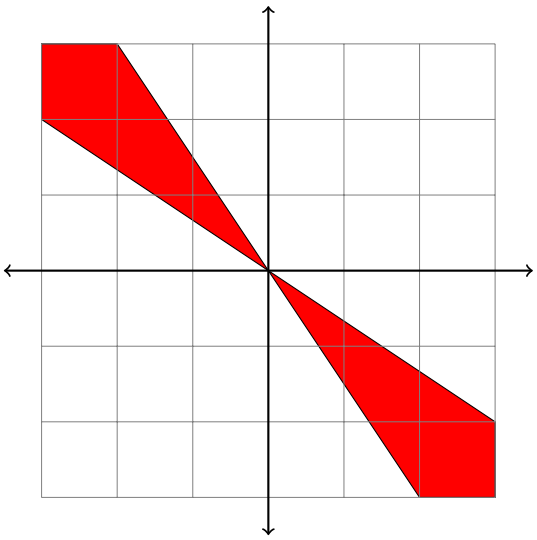
MA 322 - 09

Assignment 6

1. Can a square matrix with two identical columns be invertible? Why or why not?
2. Show that if AB is invertible then so is B.
3. If $T\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} x_2 \\ x_1 - x_2 \\ 2x_2 + x_3 \end{bmatrix}$ find T^{-1}.
4. The following regions are **not** subspaces of $\mathbb{R}^2$. For each example give pairs of a vectors or a pair of a vector and a real number that demonstrates this.







5. (a) Is $\begin{bmatrix} -4 \\ 6 \end{bmatrix}$ and $\begin{bmatrix} 2 \\ -3 \end{bmatrix}$ a basis for $\mathbb{R}^2$?

   (b) Is $\begin{bmatrix} 1 \\ 1 \\ -2 \end{bmatrix}$, $\begin{bmatrix} 7 \\ 0 \\ -5 \end{bmatrix}$ and $\begin{bmatrix} -5 \\ -1 \\ 2 \end{bmatrix}$ a basis for $\mathbb{R}^3$?