

**Question — assigned:**

1. Compute the  $\ell_2$  and  $\ell_\infty$  norm of the matrix  $\begin{pmatrix} -1 & 2 \\ 3 & -1 \end{pmatrix}$
  
  
  
  
  
  
  
  
  
  
2. Find the eigenvalues and eigenvectors of the matrix  $\begin{pmatrix} 1 & 2 \\ 3 & 1 \end{pmatrix}$
  
  
  
  
  
  
  
  
  
  
3. For each case, give an example of a 3x3 matrix that is
  - (a) Invertible
  - (b) Singular