

Use induction to prove that  $n$  eigenvectors corresponding to  $n$  distinct eigenvalues are linearly independent:

1. As a base case, prove the statement for  $n = 2$ , i.e. prove that two eigenvectors corresponding to distinct eigenvalues are linearly independent, as in class.
2. Prove the statement for  $k + 1$ , assuming (inductive hypothesis) the statement is true for  $k > 2$ . (Use the case  $n = 3$ , discussed in class, as your inspiration.)