

POW 2018-12

2014**** Lee, Jongwon

By Cayley-Hamilton theorem, we have

$$(A - \lambda_2 I)(A - \lambda_1 I) = 0$$

implying that the columns of $A - \lambda_1 I$ are eigenvectors corresponding to λ_2 . But the eigenspace cannot be the whole space since then we have $A = \lambda_2 I$ and A would have only one eigenvalue. Therefore, the eigenspace has dimension 1 spanned by v_2 , so that the columns of $A - \lambda_1 I$ are multiples of v_2 .