Name: _____ ID #:_____

As always you need to show your work. Fill in the appropriate blanks

1. A pair (λ, v) is an eigen pair if [ ] and [ ]

2. For $A = \begin{pmatrix} 1 & 2 \\ -2 & 1 \end{pmatrix}$.

2.1. Compute the eigenvalues of A [ ]

2.2. compute the eigenvectors of A [ ]

3. The matrix $A = \begin{pmatrix} a & -b \\ b & a \end{pmatrix}$ is a scaling by [ ] and a rotation by [ ]

4. A scaling by r and a rotation by angle ϕ has matrix $A = \begin{pmatrix} & \end{pmatrix}\begin{pmatrix} & \end{pmatrix}$ i

5. The matrix $A = \begin{pmatrix} 1 & -2 \\ 2 & 1 \end{pmatrix}$ is a scaling by [ ] and a rotation by [ ]