#31 in 5.1

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SOLUTION: The transformation leaves any point on the line fixed, so that if $\mathbf{v}$ is any point on the line, then

$$A\mathbf{v} = \mathbf{v}$$

Therefore, $\lambda = 1$ and the eigenspace is the line.

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so again A has one eigenvalue $\lambda = 1$ with the eigenspace being the line. The other eigenspace is the plane orthogonal to the line with complex evals.