Characteristic polynomials, eigenvalues and eigenvectors

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Practice Assignment • 30 min

English

Your grade: 90%

Your latest: **90%** • Your highest: **90%**

To pass you need at least 80%. We keep your highest score.

Next item

1. Given a matrix $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$, recall that one can calculate its eigenvalues by solving the characteristic polynomial $\lambda^2 - (a+d)\lambda + (ad - bc) = 0$. In this quiz, you will practice calculating and solving the characteristic polynomial to find the eigenvalues of simple matrices.

1 / 1 point

For the matrix $A = \begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix}$, what is the characteristic polynomial, and the solutions to the characteristic polynomial?

- ○ $\lambda^2 + 3\lambda - 2 = 0$

  $\lambda_1 = -1, \lambda_2 = 2$
- ○ $\lambda^2 + 3\lambda + 2 = 0$

  $\lambda_1 = -1, \lambda_2 = -2$
- ○ $\lambda^2 - 3\lambda - 2 = 0$

  $\lambda_1 = 1, \lambda_2 = -2$
- ◉ $\lambda^2 - 3\lambda + 2 = 0$

  $\lambda_1 = 1, \lambda_2 = 2$

Correct

Well done! This matrix has two distinct eigenvalues.