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### 2.1.3 What you will learn

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## 2.1.3 What you will learn


Upon completion of this week, you should be able to

- Determine if a given vector function is a linear transformation.
- Identify, visualize, and interpret linear transformations.
- Recognize rotations and reflections in 2D as linear transformations of vectors.
- Relate linear transformations and matrix-vector multiplication.
- Understand and exploit how a linear transformation is completely described by how it transforms the unit basis vectors.
- Find the matrix that represents a linear transformation based on how it transforms unit basis vectors.
- Perform matrix-vector multiplication.
- Reason and develop arguments about properties of linear transformations and matrix vector multiplication.
- Read, appreciate, understand, and develop inductive proofs. (Ideally you will fall in love with them! They are beautiful. They don't deceive you. You can count on them. You can build on them. The perfect life companion! But it may not be love at first sight.)
- Make conjectures, understand proofs, and develop arguments about linear transformations.
- Understand the connection between linear transformations and matrix-vector multiplication.
- Solve simple problems related to linear transformations.

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