1.1.3 What You Will Learn

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Upon completion of this week, you should be able to

• Represent quantities that have a magnitude and a direction as vectors.

• Read, write, and interpret vector notations.

• Visualize vectors in [mathjaxinline] \mathbb{R}^2 [/mathjaxinline].

• Perform the vector operations of scaling, addition, dot (inner) product.

• Reason and develop arguments about properties of vectors and operations defined on them.

• Compute the (Euclidean) length of a vector.

• Express the length of a vector in terms of the dot product of that vector with itself.

• Evaluate a vector function.

• Solve simple problems that can be represented with vectors.

• Create code for various vector operations and determine their cost functions in terms of the size of the vectors.

• Gain an awareness of how linear algebra software evolved over time and how our programming assignments fit into this. (enrichment)

• Become aware of overflow and underflow in computer arithmetic. (enrichment)

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