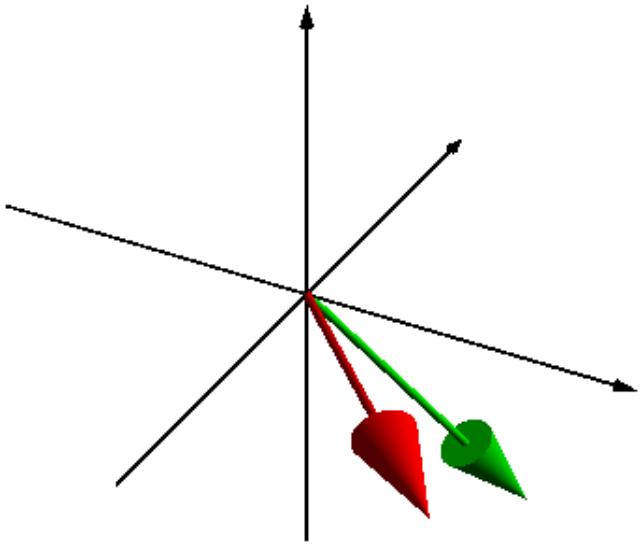
Lecture 12: Worksheet

Correlation



In this worksheet, we compute the correlation of two random variables in the probably simplest possible case. The probability space has only 3 elements. We want to visualize the correlation between the two vectors $X = \begin{bmatrix} 2 \\ 0 \\ -2 \end{bmatrix}$ and $Y = \begin{bmatrix} 0 \\ 1 \\ -1 \end{bmatrix}$. These two vectors represent **centered random variables**, which is an other word for "random variables with zero mean".

1 Find the covariance of X, Y.

2 Find the standard deviations of both vectors.

3 Find the correlation of X, Y.

Linear Algebra	Probability Theory
Vector	Random variable
Length	Standard deviation
Correlation	Dot product