Boost your data science skills. Learn linear algebra :
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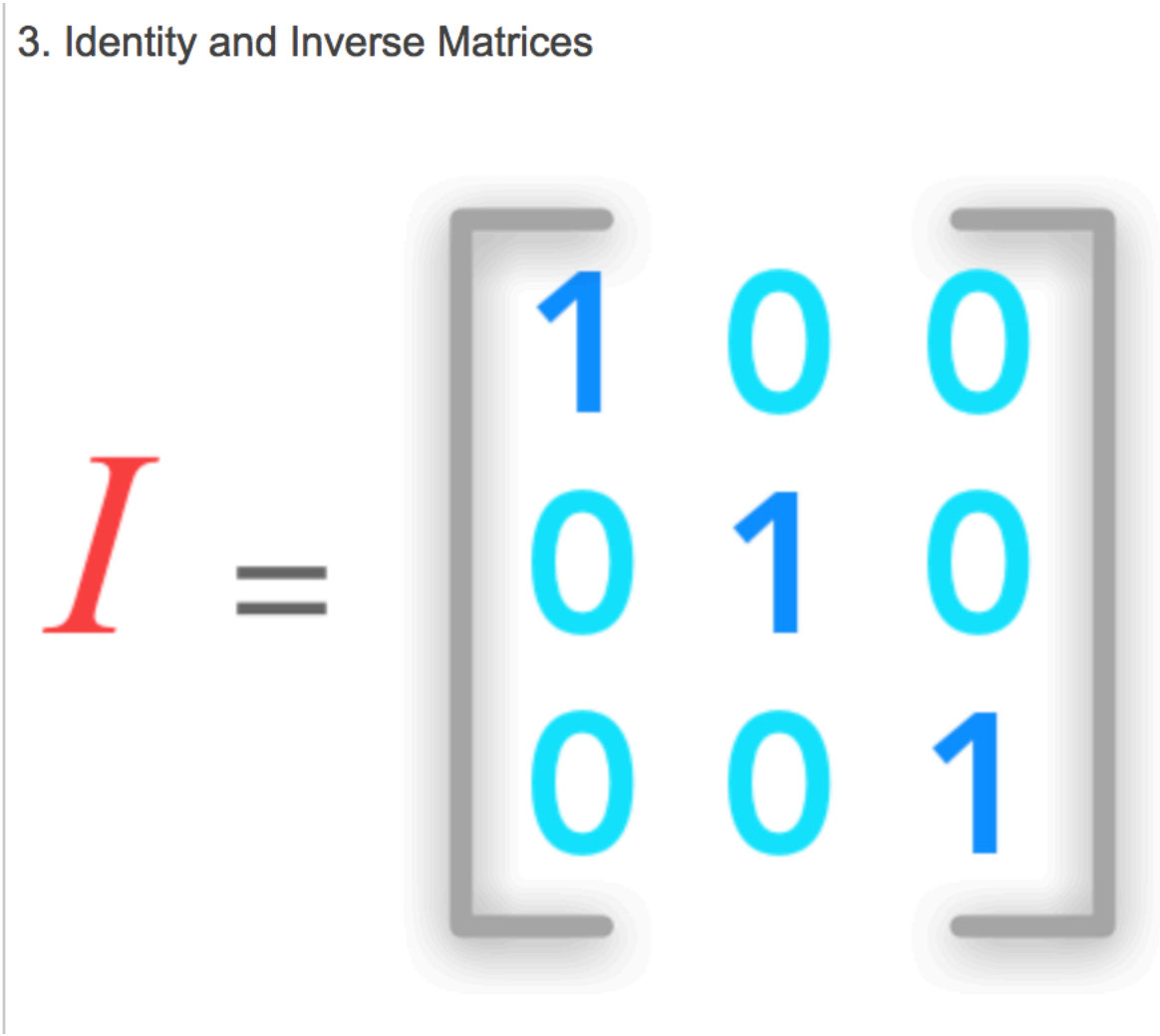
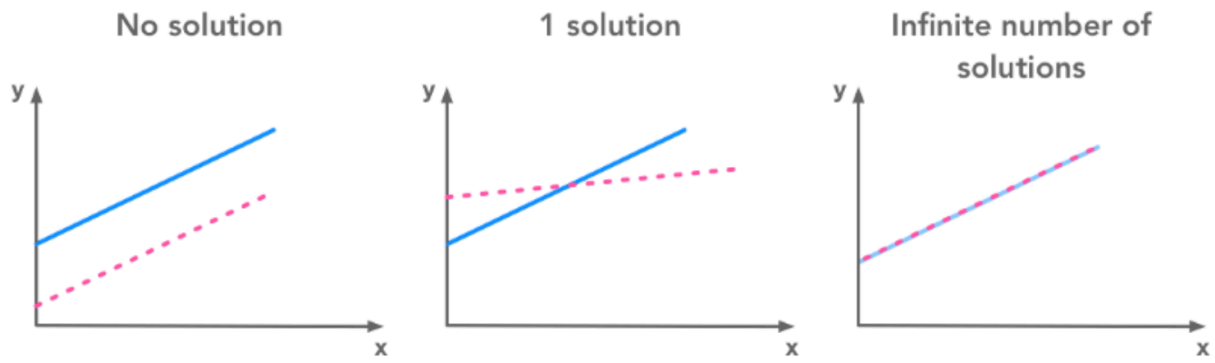
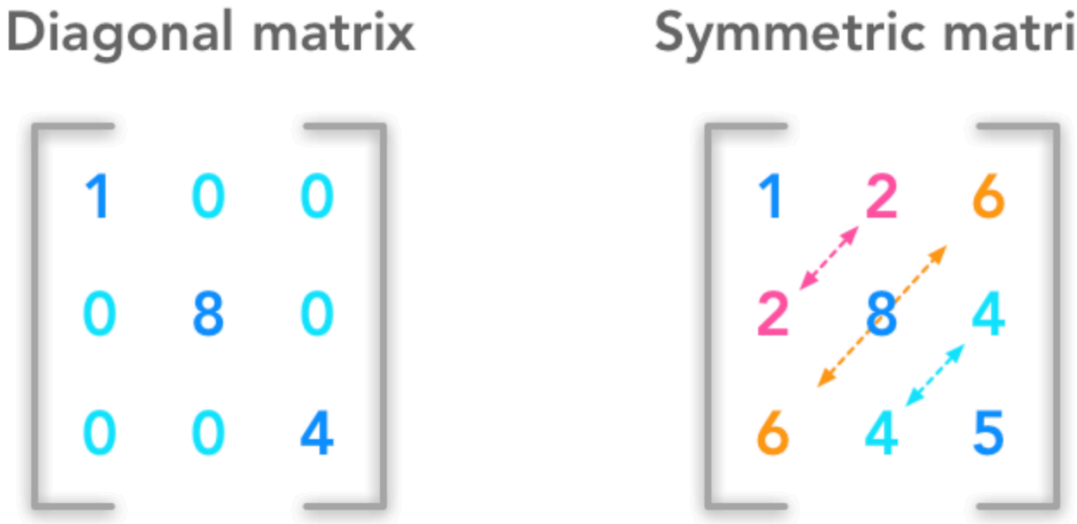
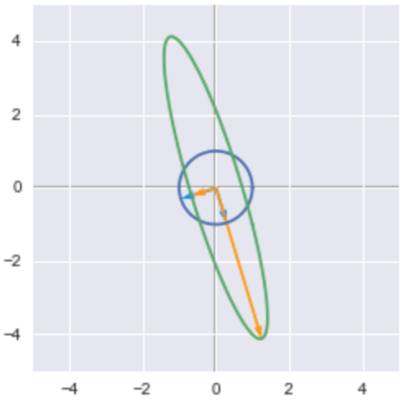


4. Linear Dependence and Span



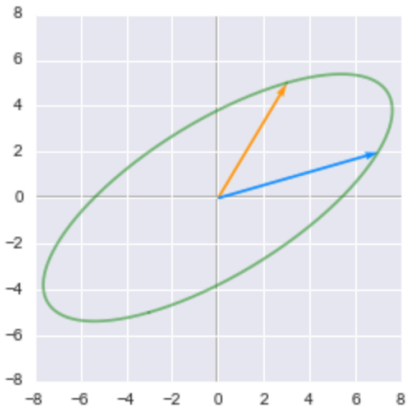


7. Eigendecomposition



We will see some major concepts of linear algebra in this chapter. We will start by getting some ideas on eigenvectors and eigenvalues. We will see that a matrix can be seen as a linear transformation and that applying a matrix on its eigenvectors gives new vectors with same direction. Then we will see how to express quadratic equations into a matrix form. We will see that the eigendecomposition of the matrix corresponding to the quadratic equation can be used to find its minimum and maximum. As a bonus, we will also see how to visualize linear transformation in Python!

8. Singular Value Decomposition

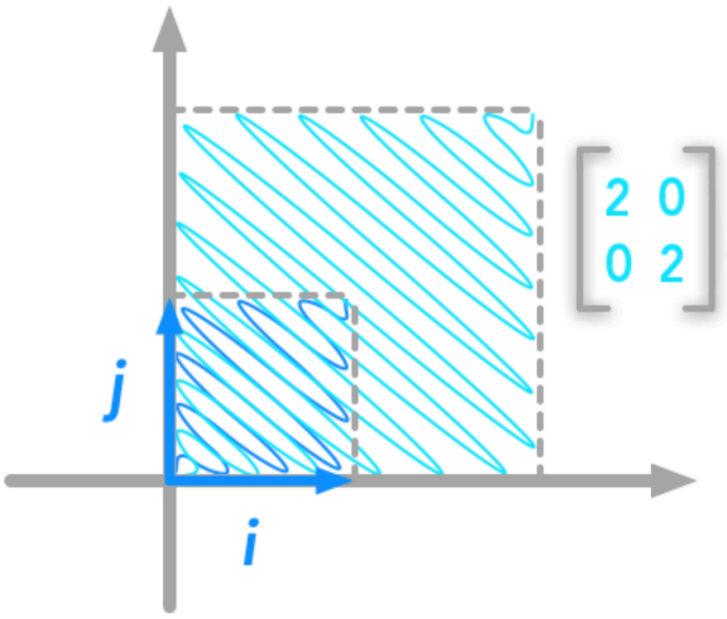


We will see another way to decompose matrices: the Singular Value Decomposition or SVD. Since the beginning of this series, I emphasized the fact that you can see matrices as linear transformation in space. With the SVD, you decompose a matrix in three other matrices. We will see that we can see these new matrices as *sub-transformation* of the space. Instead of doing the transformation in one movement, we decompose it in three movements. As a bonus, we will apply the SVD to image processing. We will see the effect of SVD on an example image of Lucy the goose so keep on reading!

10. The Trace Operator

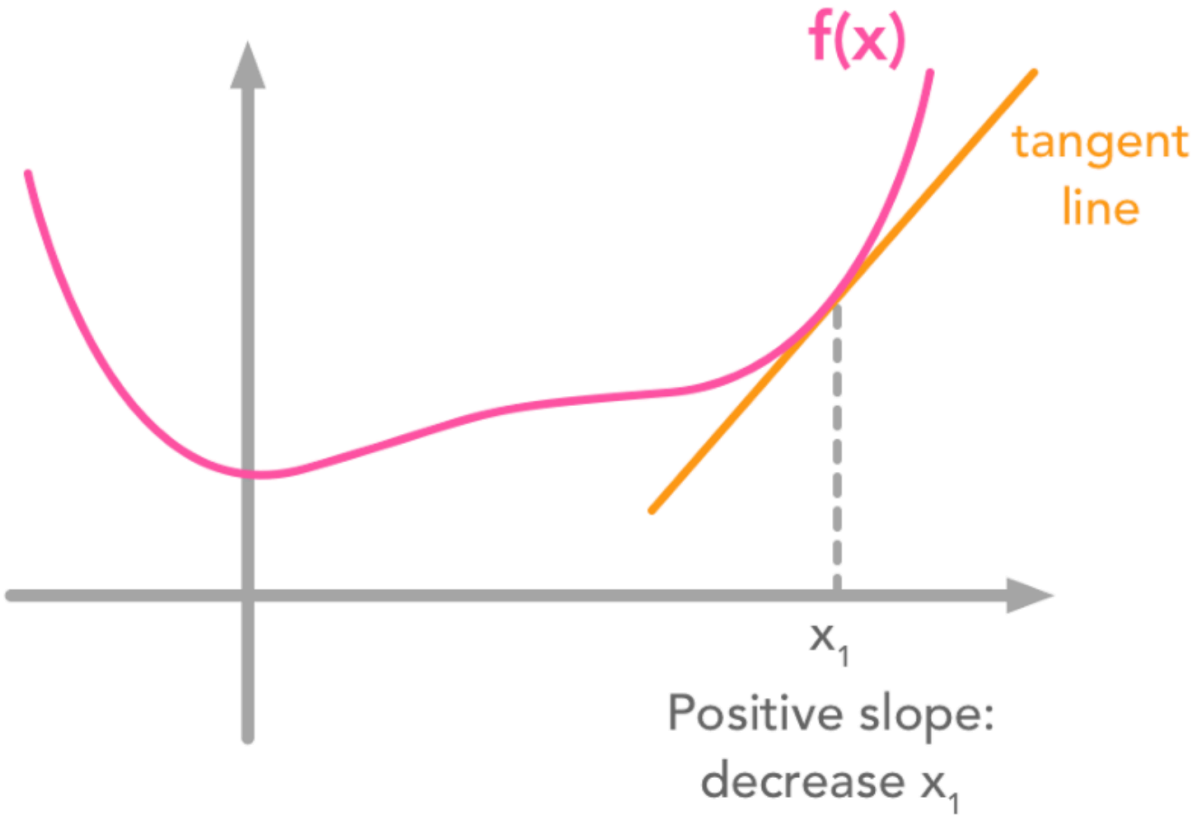
We will see what is the Trace of a matrix. It will be needed for the last chapter on the Principal Component Analysis (PCA).

11. The Determinant



This chapter is about the determinant of a matrix. This special number can tell us a lot of things about our matrix!

12. Example: Principal Components Analysis



This is the last chapter of this series on linear algebra! It is about Principal Components Analysis (PCA). We will use some knowledge that we acquired along the preceding chapters to understand this important data analysis tool!