MA2823: Introduction to Machine Learning   Homework 2
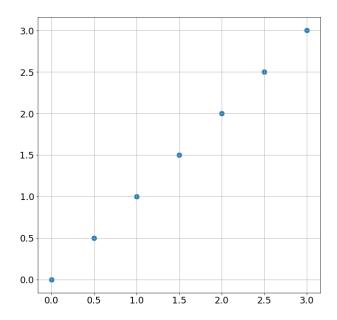
Turn in your homework
— as a PDF file
— named `HW02_<LastName>_<FirstName>.pdf` (no accents)
— at http://tinyurl.com/ma2823-2017-hw

Question 1

What is the first principal component of those 7 points in two dimensions?

Solution: The first PC is the direction of greatest variance of the data, i.e. that of the diagonal line. Moreover, PCs have a norm of 1. Hence the answer is $\left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$ or $\left(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$.

Note: A principal component is a **unit norm vector**, not a line.