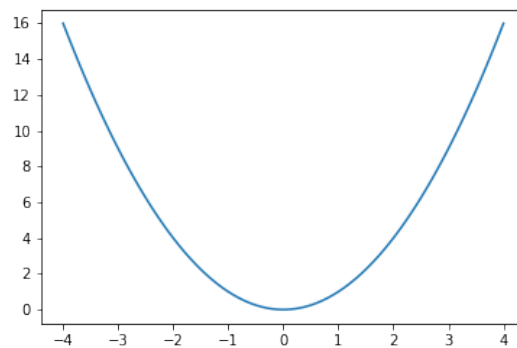


Project #2
November 26, 2022

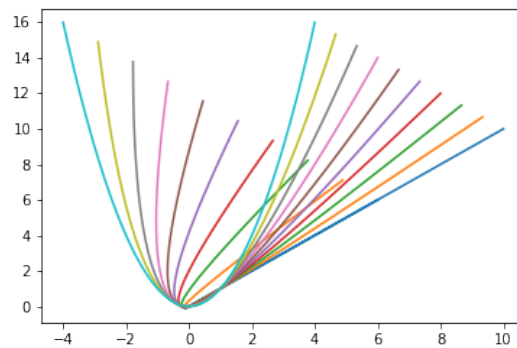
For project number 2 you will be writing a python script that achieves each of the following. Include matrices corresponding to each transformation:

1. Generate a vector function in two variables with one parameter. An example is shown for the following vector function:

$$\vec{r}(t) = \begin{pmatrix} t \\ t^2 \end{pmatrix}$$

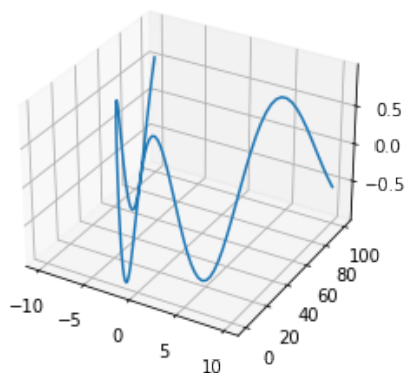


2. Generate a vector function in two variables and then stretch it about the line $y = x$ by a factor of a for $a \in \{0, 0.1, \dots, 1\}$. An example is shown below for the vector equation defined in question 1.



3. Generate a vector function in three variables with one parameter. An example is shown for the following vector function:

$$\vec{r}(t) = \begin{pmatrix} t \\ t^2 \\ \sin(t) \end{pmatrix}$$



4. Generate a vector function in three variables and then rotate apply each of the following transformations:

- Rotate by θ degrees about the x -axis
- Rotate by ϕ degrees about the z -axis

An example is shown below for the vector equation defined in question 3 with for $\theta \in \{0, \frac{\pi}{16}\}$ and $\phi = \frac{\pi}{20}$.

