# Theme 2: Font transformations

## Task 1)



Suppose that the letter N on the left-hand side is given in a 12-point format, and that the version on the right-hand side is in italic 16-point format.

Will there be a linear transformation that maps the N on the left to the *N* on the right? How can we go about to find this? How would the transformation look like? How could we write this mathematically? What objects/concepts can we use to express this transformation?

## Task 2)

How would the letter N over (the version on the left-hand side) be transformed if you use these transformation matrices:

$$A= \left(\begin{matrix}-3/2&0\\0&5/3\end{matrix}\right)$$

$$B= \left(\begin{matrix}-1&-1/3\\0&-1\end{matrix}\right)$$

$$C= \left(\begin{matrix}-1/2&1\\-1&0\end{matrix}\right)$$

## Task 3)

What would the transformation matrices in task 2 do to the letter Q?



## Task 4)

What linear transformation maps the letter G on the left-hand side to the version you see on the right-hand side below?



## Appendix: Visualizing 2d line segments in Geogebra and a bit about MatLab/Octave syntax

The command Segment adequately performs this:



Remember to surround a point in Geogebra by parentheses like this:



You may use <http://octave-online.net> if you do not have Matlab installed on your computers.

This is an example on a matrix in Matlab: A = [1 2; 3 4]

And this is how a column vector is written: x = [3;4]