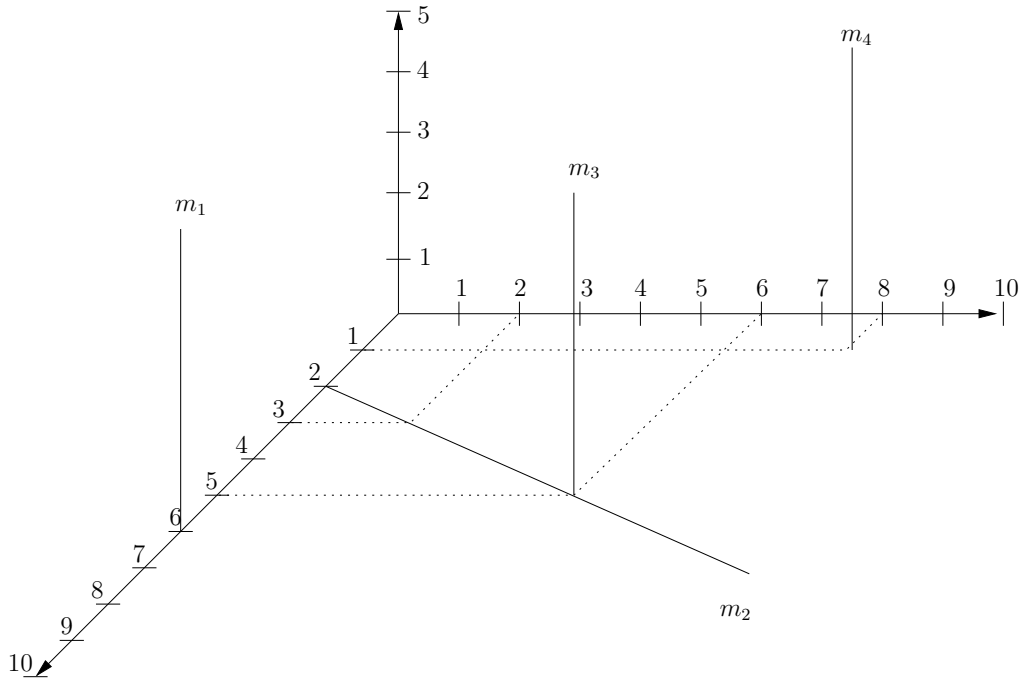


1. Let us have a manipulator with four axes of motion as shown in the figure



- (a) Draw the coordinates system of the links as defined by the Denavit-Hartenberg convention into the figure;
 - (b) Compute the Denavit-Hartenberg parameters of the manipulator.
2. Let us have an axis passing through points $[0 \ 0 \ 1]^T$ and $[1 \ 1 \ 1]^T$. Find the axis of rotation belonging to the matrix of this motion.
 3. Divide polynomial $f = x^2 y z^2 + y + 1$ by polynomials $f_1 = x y z^2 - x y z + x$, $f_2 = x + x z$ with $x >_{lex} y >_{lex} z$.
 4. Construct a Groebner basis for the following system of equations

$$\begin{aligned} x^3 y + x^2 y z - x^2 &= 0 \\ x y + y z - 1 &= 0 \\ x + z - 1 &= 0 \end{aligned}$$

and find the solutions.

Use additional paper sheets if necessary.