Práctica 1

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1. $\mathbf{R^3}$ of $\mathbf{R} = \{(1,1),(1,2),(2,3),(3,4)\}$

$$R = \begin{pmatrix} 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix}, R^3 = R \times R \times R \rightarrow R^3 = \begin{pmatrix} 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix} \times \begin{pmatrix} 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix} \times \begin{pmatrix} 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix},$$

$$R^3 = \begin{pmatrix} 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \end{pmatrix} \times \begin{pmatrix} 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \end{pmatrix}$$

The result is: $R^3 = \{(1,1),(1,2),(1,3),(1,4)\}$ and we can check it with the *powerrelation.m* script:

```
octave:8> powerrelation({['1','1'],['1','2'],['2','3'],['3','4']},3)
ans =
  {
    [1,1] = 11
    [1,2] = 12
    [1,3] = 13
    [1,4] = 14
  }
```

2. Find a .tex file that contains \usepackage{amsthm,amsmath}

```
$ cd files/
$ grep -n -F "\usepackage{amsthm, amsmath}" *.tex
```

The output of the command is:

```
mainP.tex:6:\usepackage{amsthm, amsmath}
```

Indicating the string $\usepackage\{amsthm,amsmath\}$ was found in the line number 6 of the .tex file called *mainP.tex*